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ABSTRACT

A research study based largely on the published literature and including interviews with an extensive selection of librarians and library users, educationalists and employers, was made of the function of the library in a college of advanced educations. (CAE). The three main areas of investigation were use patterns, collection analysis, and processing and service technology. Conclusions were that the CAE's are making a genuine contribution to diversity in tertiary education and will provide a viable alternative to university education for those whose interest lies in technology. Teaching methodology will require new attitudes to encourage life-long learning -- teaching methods, and libraries must find their place in this process and contribute positively to it. (AB)

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THE FUNCTION OF THE LIBRARY IN A COLLEGE OF ADVANCED EDUCATION

Report of a research project conducted for the
Commonwealth Department of Education and Science on
the recommendation of the Commonwealth Advisory Committee
on Advanced Education

by

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INTRODUCTION

The following pages comprise a report on The Function of the Library in a College of Advanced Education.

This investigation was financed by a research grant made by the Commonwealth Minister for Education and Science on the recommendation of the Commonwealth Advisory Committee on Advanced Education.

The Committee's recommendation followed a suggestion of its Library Sub-Committee, which had requested me, as one of the members, to design a project in this area and, if it were approved, to supervise its conduct.

In the event, the investigation was most ably carried out by Miss Lorna Hean B.A., A.L.A.A., Librarian of the Sydney Technical College, who was granted twelve months' special leave (November 1968-October 1969) by the New South Wales Department of Technical Education for this purpose.

Miss Hean and I worked closely together on this project, accommodation and other facilities for it being provided by the University of Sydney in the Fisher Library. However, I should like to make it completely clear that while I willingly share responsibility for the conclusions reached and the recommendations made in the report, the real work was done by Miss Hean, my contribution being limited to discussion, though this was quite extensive. Any credit to be assigned is undoubtedly hers, any blame to be shouldered is just as certainly mine.

As envisaged in the original design for the project, our research was based largely on the published literature, though this covered a wide range, as can be seen from the bibliography included in our report. In addition, however, Miss Hean secured interviews with an extensive selection of librarians and library users, educationalists and employers and, in addition to a thorough investigation of the New South Wales scene, was able to inspect Colleges of Advanced Education in South Australia and Victoria.

The Library Sub-Committee had expected, and Miss Hean and I had hoped initially, to treat three main areas of investigation, which could be described generally as use patterns, collection analysis, and processing and service technology. As the project developed, however, and in view of the limited time at our disposal, we were forced to concentrate on some issues to the exclusion of others.

In particular, we have had to leave virtually untouched two questions in which the Library Sub-Committee was keenly interested. These are, first, the possibility or desirability of centralised or cooperative acquisition and cataloguing routines and, second, the mechanisation of processing and/or service operations, especially by computerisation. It might not be inappropriate to note, however, that the original design for the project included the following statement relating to these questions:

> "It is likely that the study would lead only to fairly general conclusions in this area, since the one certain feature to emerge from a considerable amount of research and comment in this area in recent years, is that local circumstances of particular libraries exercise a dominant influence on the economics of such proposals."

We regret having had to omit this area of investigation but we do not regret any of the time we spent, though this was much in excess of our original estimates, on the introductory sections of our work.

Miss Hean and I would like to express our thanks to the University of Sydney for its hospitality to our work and to the New South Wales Department of Technical Education for facilitating it, to the many librarians and others who gave so freely of their time in demonstration and discussion and to Mrs I. Holmes, Miss P. Waugh and Mrs B. Douglas of the University of Sydney Library who coped cheerfully with the aggravations of typing, re-typing and copying.

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I THE CONCEPT OF THE COLLEGE OF ADVANCED EDUCATION

The function of the library in a college of advanced education depends essentially on the nature of the college of advanced education itself. An accurate concept of the C.A.E. was therefore considered to be a prerequisite to the present investigation.

Viewed retrospectively, there have been many changes and developments in the advanced education area during the twelve months of our research project (November, 1968, to October, 1969). Worthy of mention are the first award of degrees for the successful completion of a C.A.E. course, namely the Bachelor of Pharmacy degrees awarded by the Victoria Institute of Colleges to graduates of the Victorian College of Pharmacy; the inclusion of teacher education in the Canberra College of Advanced Education, and its inclusion as an integral part of the Mitchell College of Advanced Education, through the proposed absorption into this college in 1970 of the Bathurst Teachers' College; publication of the "Second Report of the Commonwealth Advisory Committee on Advanced Education"[1]; and the publication of the Sweeney[2] and Wiltshire[3] Reports, the former concerned with salaries of lecturers and senior lecturers in colleges of advanced education and the latter with academic awards in the colleges. Not all of these events have helped clarify the concept of "advanced education" and the role of the C.A.E.'s; in fact, some, as will be mentioned in the course of this report, appear to have clouded the issue. Perhaps this is inevitable, for the reason emphasised by the Wark Committee in its second report - "we are dealing with an evolving concept not susceptible to close definition"[4]. Nevertheless, a working definition is a necessity.

The starting point in our investigation was, therefore, a study of the "First Report of the Commonwealth Advisory Committee on Advanced Education"[5], to define "advanced education" and establish the special characteristics of the college of advanced education as an educational institution. The term "advanced education" is not self-explanatory. It could be thought to cover the whole area of tertiary (i.e. post secondary school) education, but has in fact been used as the term for "non-university tertiary education". This eliminates the university, but is otherwise no more self-explanatory, as can be seen from the following statement of

Mr J. McCusker, Assistant Secretary, Advanced Education Branch, Department of Education and Science, Canberra, and Secretary of the Commonwealth Advisory Committee on Advanced Education, regarding the newly coined terms "advanced education" and "college of advanced education":

> "Whatever individual opinion on these terms might be it was a brave attempt to link a wide range of institutions under a heading which would express their core similarity, namely, that they are educational institutions teaching at the post secondary school level with a vocational bias and offering courses leading to professional competence in a range of disciplines. It is a term under which we can see the possibilities of a system embracing institutes of technology, agricultural colleges, paramedical colleges, conservatoria of music, art schools and so on. Clearly this area was being thought of as a system - albeit a loose system - which it was necessary to develop in its own right"[6].

But colleges of advanced education were not intended to be just post secondary school educational institutions, offering professional training, with a vocational bias. Another element was to be distinguished, for in their educational programmes there was to be a "significant emphasis on liberal studies"[7]. Mr McCusker refers, as does the Wark Committee in its first report, to the statement of the then Prime Minister, Sir Robert Menzies, in November, 1965:

> "What is envisaged is not merely improved arrangements for teaching technical subjects. An important part of the new concept is the encouragement of more liberal studies in these colleges, and the establishment of courses which will provide greater breadth in education for all students who take tertiary level training outside the universities"[8].

By definition of the Commonwealth Government, teacher education was excluded from the field of advanced education. The decision to leave the responsibility for teacher training entirely to the States appears to have been arbitrary rather than logical. However, the terms of reference of the Wark Committee clearly stated:

> "A teacher training college will not be eligible for assistance or for approval (from the Commonwealth) of any of its courses even if it conforms with the other criteria for a college of advanced education. Nor will a segment of an advanced education college which

> is concerned primarily with meeting the direct need of teacher training be eligible"[9].

The Wark Committee was at pains to distinguish colleges of advanced education from universities, as comparisons between the two types of tertiary institution would inevitably be made. Six important differences in the colleges were listed[10]:

(a) Students with somewhat different types of interests;
(b) A greater concentration upon part-time studies associated with employment, especially in scientific fields;
(c) A more applied emphasis;
(d) A more direct and intimate relationship with industry and other relevant organizations;
(e) Far less attention to post-graduate training and research;
(f) A primary emphasis on teaching.

But the functions of the university itself have not been clearly defined, so that comparison of the college of advanced education with the university is not sufficient to establish the special functions of the college of advanced education.

In general, we felt at this stage that the "raison-d'être" of the college of advanced education could not be fully comprehended by a study of the first Wark Report alone. This feeling was strengthened by many confused and at times conflicting expressions of opinion, both verbal and written, amongst educationists and librarians; all reflecting the lack of a clear, positive concept of the C.A.E. In an article on "The Development of Colleges of Advanced Education", the statement was made, "Adequate finance, then, and the knowledge necessary to make use of it are the means by which the proper development of these new colleges is to be achieved". "But", it was pointed out, "much of the value will be lost if the general public in Australia is not made fully aware of the existence of this genuine alternative to the university, and given every encouragement to use it"[11]. Samples of varying verbal expressions of opinion about colleges of advanced education are statements that in ten years' time or even less there will be no difference between colleges of advanced education and universities (just as the English Colleges of Advanced Technology turned into universities); and that when things "shake down" the C.A.E.'s will turn out to be more like the

United States junior or community colleges and will thus never be the equal of universities. Both these assertions have of course already been countered, the first by the Martin Committee, which insisted that colleges "resist the temptation to copy the educational processes and curricula of universities. The Committee's proposals envisage a greater diversity of tertiary education in Australia, but any hope of achieving this diversity would be nullified if colleges attempted to transform themselves into universities"[12]; and by the Commonwealth Government, which expressed a flat refusal to support courses leading to degrees or the virtual conversion of C.A.E.'s into universities, and, in the terms of reference it gave the Wark Committee, stated that C.A.E. courses "provide on completion a standard of attainment at diploma level (but not at degree level)"[13]. The second assertion is contrary to the following statement of the Wark Committee: "We cannot too strongly emphasize that a college of advanced education is not to be confused with the type of college generally known in America as a junior college"[14].

Written expressions of opinion on colleges of advanced education include the following:

Dr L.N. Short, Director of the Educational Research Unit, University of New South Wales, in commenting on the Wark summary of the distinction between universities and colleges of advanced education, says: "This summary... provides little justification for the type of institution advocated by the Committee. The real need in Australian technical education is the institution which accepts students who have completed a secondary education but not necessarily to the standard required for matriculation, and provides a sub-professional course with practical orientation but including adequate components of basic science and general education"[15]. Again, Dr Short says, "We still need to clarify the essential differences between the basic (pass degree and diploma) work of the university and the technical college and to establish the validity of the differences"[16]; and "Although much has been written concerning the special characteristics of colleges of advanced education, particularly in comparison with the universities, little of it is convincing and much amounts to little more than a persistent reiteration of the assertion that they are different. In the United Kingdom it was found that, under similar circumstances, the differences were so insignificant that the colleges quickly became universities. We need to clarify the roles of the respective institutions..."[17]. Dr W. Stern, Senior Lecturer in Chemistry in the New South Wales Institute of Technology, in an article on "The New South Wales Institute of Technology", comments on the confusion about the role of the college of advanced education. He says, "A critic of the New South Wales Institute of Technology has stated that it is regarded as a technical college by the universities, regarded as a second-rate university and a cheap source of labour by industry, and completely disregarded by the general public"[18], and aptly comments, "Such remarks illustrate the general ignorance as to the true function of the Institute"[19].

We decided to go back and study again the Martin Report, which reviewed the whole field of tertiary education and made specific recommendations regarding diploma-awarding technological (and other) institutions or colleges within an Institute of Colleges. These diploma-awarding colleges were subsequently referred to collectively as "colleges of advanced education" and became the special concern of the Wark Committee. The Martin Committee deplored "the over-valuation of the social status of a university degree"[20] and the "undue emphasis on university education"[21] in the present system of tertiary education in Australia, and its consequence - the weakness of non-university tertiary institutions, which in turn prevents "the latent abilities of many young Australians from being fully developed"[22]. It thought of the diploma-awarding colleges as:

(1) Widening the opportunities for tertiary education, to meet community needs (especially the supply of young people qualified in the technologies), and to satisfy the aspirations of individuals according to their inclination and capacity ("The known needs of the community for young people trained for a wide range of occupations have led the Committee to recommend the expansion, improvement, and establishment of appropriate institutions to provide a wider diversity of tertiary education"[23]);

(2) Assisting in the rationalization of tertiary education, thereby relieving the strain on the universities and protecting them from students who are not "of university ability"[24], that is, who are "of a somewhat lower academic capacity"[25], but elect or are urged to go to universities, "due to the lack of other tertiary institutions of comparable status in the eyes of the community"[26].

The Wark Committee phased out the Martin Committee's idea of colleges of advanced education "offering courses pitched at a lower academic level"[27] and regarded C.A.E. courses as being equal to, though different from, university courses. Dr H.S. Williams, Director of the Western Australian Institute of Technology, and a member of the Wark Committee, subsequently regretted the Martin Report's "continual emphasis on ability differentials" and "little attempt to bring to the fore the differentials in terms of the motivations and interests of the students, and the objectives and methods of the institutions"[28]. Presumably, if an Australian Tertiary Education Commission had been set up, replacing the Australian Universities Commission, as the Martin Committee recommended, the framework for the whole tertiary education area would have been clearly defined.

The Martin Committee said, "Interviews with and submissions from leaders in industry and commerce have impressed the Committee with the importance of the training given by technical institutions, the worth of their diplomates, and the expanding need for them in industry and commerce. The Committee has concluded that the rate of growth necessary in this sphere should be greater than in any other sphere of tertiary education"[29]. Moreover, the Wark Committee stated that the ability of the colleges to "offer professional level courses in their own right" "is already well recognized by a wide range of employers and professional institutes"[30]. Despite this, we felt the need, at this point, to investigate for our own personal enlightenment, by further reading and direct contact, such questions as the particular needs of industry, commerce and the community for the diplomate product of the college of advanced education; the meaning of "applied bias", as revealed by actual course content; the feeling towards the diplomate of professional bodies such as the Royal Australian Chemical Institute and the Institution of Engineers, Australia; and the reasons for the special emphasis on inclusion of liberal studies in C.A.E. courses. The answers to these questions, we felt, would help provide a basis for assessing the validity of the concept of the C.A.E. as "equal to, but different from, the university". Is this latter real, or just an expedient quibble?

The situation in New South Wales is perhaps particularly enlightening, where the technological diploma courses of Sydney Technical College were taken over by the University of Technology (later the University of New South Wales), which was established in 1949. The diploma courses were increased in length and altered in character - the proportion of basic to technological or applied subjects studied increased - and finally became degree courses of the University of New South Wales. The Department of Technical Education then turned its attention to technician training, and, after thorough investigation of the needs of industry and commerce for "middle-level" personnel (to bridge the gap between the technologist and the tradesman), and the knowledge and skills required by such personnel, in the mid-1950's introduced certificate courses to give sub-professional training in various branches of engineering, chemistry, biology, metallurgy, etc. Dr H.S. Williams has expressed the opinion that "... the emergence of technicians and the recognition of the need to provide specific courses for them may well prove to be historically the most significant phenomenon in technical education in the post-war period, and lead to more rational use of our resources of ability. It has indeed been suggested that what appears as a shortage of professional personnel is, in fact, often rather a shortage of the technicians who support their efforts"[31]. Despite the availability of part-time, as well as full-time, degree courses at the University of New South Wales, and particularly the six-year part-time courses leading to the award of Bachelor of Science in Technology, the introduction of certificate courses by the Department of Technical Education, expansion at the University of Sydney and, later, the establishment of Macquarie University, the needs of industry and commerce were not fully met, and the absence of the old diploma courses leading to the Associateship of Sydney Technical College still left a gap. As a result of representations and pressure from business and industry, the Department of Technical Education in 1964 re-introduced diploma courses in science and architecture. In 1965 the New South Wales Institute of Technology was established within the Department of Technical Education to provide tertiary courses with an applied emphasis, different from, but complementary to, those of the universities. In particular, its function was to provide, at tertiary levels, vocational education for manpower engaged in professional, technical, administrative, distributive, rural and other occupations. Diploma courses in various branches of engineering and in other fields such as building and quantity surveying were then introduced. In 1967 the New South Wales Institute of Business Studies was established and introduced a Commerce Diploma course. It also took over and revised the Management and Public

Administration Diploma courses of the Department of Technical Education. In 1969, the business studies sector was incorporated in the New South Wales Institute of Technology, which now comes under the jurisdiction of the newly created New South Wales Advanced Education Board, instead of the Department of Technical Education.

The first industrial contact made was Mr H.J. Brown, Technical Director of Philips Electrical Pty. Ltd., since he was known to have deplored the loss to industry of the diplomate-type of product when the University of Technology became the University of New South Wales, that is, virtually just another university, and lost the special characteristics of an Institute of Technology. He has had a wide experience over some thirty years in government organisations such as the C.S.I.R.O., and in industry, as well as in technical teaching, and was, in addition, vitally concerned with the organisation and planning of the University of Technology, being its first member of staff, Foundation Professor of Electrical Engineering and Assistant Director. Mr Brown re-affirmed that a void was left in industry by the cessation of the diploma courses of Sydney Technical College, and spoke of the disinclination of the university graduate (a) to go into business and industry at all; and (b) to go into any department other than research, if he does enter industry after his graduation. This disinclination is found in pass graduates generally, and even more in honours graduates and postgraduate students, and is evident in other parts of the world as well, particularly in Great Britain, and to some extent the United States. "...Graduates are tending to shy away from business and industry as a career. Too many want to remain at the Universities to do postgraduate work and to join the staff of the University, even if they do not eventually do so. Too many think only in terms of a job in research work, in a University or a Government laboratory. If they consider industry, it is almost wholly in terms of the research laboratory. This applies particularly to the brighter student"[32]. But industry needs only a very small proportion to go into research - its main needs are in design and production. It is in these areas - design, production, supervision of manufacturing - that industry needs the product of a diploma course that is sensitive to the requirements of industry and creates in its students a desire to work in industry for the economic benefit of the community. "...Industry only needs a small number for research. It needs a lot for other work. In the electronics industry, which is very research-minded, we find that only 15% of the total cost of introducing a new product is spent on research, but 85% goes on development, design, production and sales. There is strong evidence for the belief that our manpower supply is unbalanced - too few engineers relative to scientists - and that it is wrongly deployed - too many in research relative to development and production"[33]. "It is important to remember that the creation of national wealth rests on the conversion of raw materials of low intrinsic value into marketable products, and this can be done only by industry. At present the increasing national expenditure on research and development is not leading to a proportionate increase in wealth... We have plenty of knowledge from which to invent and develop new products. But we seem to be lacking the men who are capable of applying this knowledge and who want to develop and design new products"[34]. "It took genius but little time and money for Whinfield and Dickson in 1941 to draw the first thread of terylene in the laboratory. But following that discovery it was 14 years and some £20 million later that I.C.I. was able to make terylene on a commercial scale, and it occupied a great number of practical engineers and chemists not engaged in research. Technology includes scientific research and is based on the same logic, but it goes beyond the point of discovery to the mastery of production. There is a big - and expensive-difference. Discovery is not enough - development is not enough; production and application must follow to produce national wealth"[35].

In a public lecture on his recent visit to Australia, Professor Derek J. de Solla Price, Avalon Professor of the History of Science and Chairman of the Department of History of Science and Medicine at Yale University, expressed the opinion that Japan's production is such that if it had Australia's natural resources it would by now probably be as wealthy as the United States. Japan has shown in a startling fashion what can be done by application of knowledge. Great Britain, on the reverse side, has shown what happens to a nation's economy when there is a failure to apply new knowledge to production. Mr H.J. Brown explains it thus:

> "These two countries (Britain and Japan) spent in the 1960's on purely civil R. & D. (research and development) about the same percentage (1½%) of their G.N.P.

> At the same time their production grew respectively 33% and 274%, whilst exports grew 37% and 377%. The barrier to innovation is not at the scientific but at the management level. We need more better educated men at every level of business and not just more research and development. This is where America and Japan have a different philosophy in the use of their graduates which has led to greater national wealth"[36].

Mr Brown considers that the essential difference between the pass course in a university and the diploma course of an institute of technology or college of advanced education lies in the content of the course (a higher proportion of basic to technological or applied subjects in the university course) and in the attitude of mind generated in the student. He considers further that students "of university ability" will elect to go to colleges of advanced education because of the practical bias of their courses. The distinctions between universities and colleges of advanced education made by the Wark Report are all meaningful and valid, and those who say they are not, or that colleges of advanced education should be concerned with sub-professional training, are simply reflecting their own lack of industrial experience. In order to continue to serve the purpose for which they are required, colleges of advanced education must maintain the closest possible links with industry. This may be accomplished in a variety of ways - through prior industrial experience of appointees to the full-time teaching staff; through teaching staff going back and working in industry, as is done in the United States, during vacations, and when on sabbatical leave, instead of undertaking research at a university; through teaching staff engaging in industrial research; through extensive use of part-time lecturers from industry; through active Course Advisory Committees, with representatives from industry, whose advice is heeded; and through part-time courses. Though full-time courses may be introduced, Mr Brown thinks that part-time courses should always be available too, not only because of the economic necessity of some students, but because of the added contact with industry.

Mr Brown's views were found to be reinforced and amplified in other sources. Professor R.W.F. Tait, Professor of Chemical Engineering at the University of Adelaide, stresses the importance of generating in the student the right "attitude of mind", and shows the same awareness as Mr Brown of the pitfalls of university courses: " ... the emphasis on fundamental knowledge in our own courses must not be so heavy that our graduates leave the university feeling that the only worthwhile human activity is the furtherance of fundamental knowledge...We may...turn out graduates who believe that the only worthwhile objective is the design and development of new plants. We must be careful at all times to point out that the correct operation and improvement of existing plants is an occupation calling for a considerable degree of technical skill and in no way to be regarded as less worthy of the engineer's attention than the more glamorous research and development sides of the business"[37]. Professor A.N. Hambly, Professor of Chemistry, School of General Studies, Australian National University, is outspoken: "One criticism that is frequently levelled at our present courses is that they are increasingly biased towards the research laboratory and away from the practice of chemistry in industry. Whether God made man in His own image or whether men make gods in their image, it is true that lecturers and professors tend to mould students towards an academic life"[38]. Mr H.J. Brown puts it this way: "... In their undergraduate years students are brainwashed in favour of pure academic work and are left in ignorance of the needs of industry and the intellectual challenge of the business and industrial world"[39]. The main reason for this is the lack of industrial experience of members of the University staff. "Few have held senior positions in business or industry. Too many have travelled the narrow road of graduate, postgraduate, research student, lecturer, senior lecturer and perhaps reader and professor. The University is their whole life and they make little effort to get to know the world outside"[40]. In contrast, Mr Brown points out that in Eindhoven, Holland, the highest executives at Philips occupy professorial posts at the University and spend two days a week there. In the field of architectural education, Mr R. Thorne, lecturer in architecture at the University of Sydney, comments on the same sort of approach in the United States and on the Continent generally as Mr Brown mentions in Eindhoven. In the architectural schools in United States Universities and Technological Institutes, most of the teachers have private clients or are employed by a firm; and on the Continent, at Zurich Institute of Technology, as at many other European schools, professors and teachers carry on their practices from offices within the school[41].

Professor C.E. Moorhouse, Professor of Electrical

Engineering, University of Melbourne, speaks of "...the enormous difference between doing something in the sheltered atmosphere of the laboratory and doing it in the general hurly-burly of industry, or between doing something once, or when cost is no object and doing it regularly and reliably when cost is important"[42]. Mr J.A. Smithson, General Technical Manager of The Olympic Tyre and Rubber Co. Pty. Ltd., stresses the lack of preparedness of university graduates for industrial life. "...There are few graduates coming out from the universities who are ready for industrial work. They are not trained for the tempo or given any idea or encouragement of what industry offers them during their academic life. This is mainly because the professors and lecturers, being purists, project the shadow of themselves on their young, impressionable students and so reproduce their own image. The more highly intelligent students are influenced to a great extent by the ideals of their 'heroes'"[43].

"...At the age of 20 to 22 years is it not too late to train such people for positions in industry? I do not consider that it is, but I am well aware of just how difficult it can be to adapt to an industrial environment - especially after three, four or five years in an academic environment"[44]. Part-time courses with some daytime release (e.g. the equivalent of two half-days per week) and sandwich courses (say, two alternate sessions per year) overcome the problem of the student having to adapt later to an industrial environment. For this reason they are favoured in industry. Mr J.L. Stewart, Education Officer at the Colonial Sugar Refining Co. Ltd., in discussing the chemical education of non-graduate scientific workers for industry, at a symposium of the Chemical Education Division of the Royal Australian Chemical Institute at the Institute's Third National Convention, in Canberra in 1966, said that the orientation to industry should take place at the beginning rather than the end of courses[45]. Mr J. H. Kaye, Director of Personnel, Standard Telephones and Cables Pty. Ltd., and a member of the Wark Committee, believes very strongly in part-time courses, because the end-product is more mature in his approach and better able to handle people and communicate successfully with them. Mr B.E. Lloyd in his book "The Education of Professional Engineers in Australia" makes the point that "The graduate from a part-time course naturally finds his feet as a professional engineer much more readily than the graduate from a full-time course, and this is true of graduates from either universities or colleges"[46].

In a paper presented at the Third National Convention of the Royal Australian Chemical Institute in Canberra, 1966, Sir Henry Somerset, Managing Director of Associated Pulp and Paper Mills Ltd., and Chairman of Australian Titan Products Pty. Ltd., endorses Mr Brown's statement about the lack of graduates wishing to enter the "production side of industry". "Here", he says, "there is a steady demand for chemists, in the quantity sense perhaps B.Sc's and diplomates, rather than Ph.D's...the B.Sc. has practically disappeared, except in transit. These days such inducement is offered to them to proceed to higher levels that few of them peel off at the B.Sc. stage; they seem to go through and finally end up in a university post, or something similar - certainly not in industry. And yet we need them. The work is interesting"[47]. In a paper presented at one of the Chemical Education Symposia at the same Convention, Mr L.W. Weikhardt, Research and Executive Director of ICIANZ Ltd., said, "In a large works the typical response of a senior manager to diplomates and technical trainees is that they meet many needs admirably, particularly in production and development work... In some departments which lack glamour to graduates, the trained diplomate plays a particularly important role.

There is no doubt that industry will continue to require diplomates"[48].

The desire and need for diplomates in industry is also confirmed by the Metal Trades Employers' Association, which is known to be looking forward to the diplomate products of the New South Wales Institute of Technology.

Many of the views we have recorded were also expressed by the mixed group of Victorian graduates and diplomates, between 24 and 26 years of age, whose attitudes towards their academic training are reported by Mr L.R. Parker, of the Australian Administrative Staff College, in "Training and Work: a study in employment attitudes made in 1967 for the Commonwealth Advisory Committee on Advanced Education"[49]. The members of this group all held vocationally directed degrees and diplomas. Views expressed by them which are relevant to our present investigation are quoted below[50]. They are significant as coming from the employee, rather than the employer, group.

> "(c) They saw a tendency in universities to press more and more men on to higher degrees, even when the inclinations of the student and his academic record suggested otherwise. They suggested that areas of research are often chosen 'merely to compete with

> overseas universities - instead of applying research to problems of industry. We just keep guessing, year after year'.
>
> (d) They saw a tendency in universities to play down, if not actually to denigrate, technical college studies and to hold out the university degree as the only appropriate training for the academic life or for entry to commerce, government administration or industry.
>
> (f) They agreed that there was a place for at least two sorts of tertiary training in technological fields - one to cater for the practically oriented man whose interest was ultimately to hold an operating job in industry, and another which was theoretically oriented and prepared a man for research. The first would stress the practice of a technology in an industrial or commercial environment. The latter would lean to the theoretical side, and would prepare people for the intellectually and morally demanding task of pressing back the boundaries of knowledge. As they saw it, both sorts of persons were needed in the community, and they both required tertiary training. They believed the training institutions had not yet clarified what they were setting out to do - or if they had, it had not been made clear to their prospective students. An influential chief engineer said:
>
> > The universities have gone mad. If they believe they should only train research workers, they should say so, and send industry elsewhere for their operating graduates.
>
> There was a feeling among them, moreover, that people chose courses for reasons that were irrelevant - a degree because of the status if conferred, or a diploma because they felt they could not cope with university training, or because the cost appeared to be less."

The detailed analysis and comparison of past and present engineering courses in Australian universities and colleges of advanced education (including institutes of technology and the tertiary sectors of technical colleges) made by Mr B.E. Lloyd in his book "The Education of Professional Engineers in Australia" is very illuminating. It may be remembered that the Martin Committee gave special attention to the education of engineers in Australia. In terms of duration of courses, Mr Lloyd makes the point that a 3-year full-time course of 36 weeks (engineering course in a C.A.E.) is the equivalent of a 4-year full-time course of 26 weeks (engineering course in a university), both comprising approximately 2,500 hours. Similarly, a 5-year part-time course of 36 weeks (C.A.E.) is the equivalent of a 6-year part-time course of 30 weeks (university). There is thus equivalence between college and university courses in total hours of duration, despite one less in the number of academic years in the college course. Speaking of the difference in emphasis and approach of college from university courses, Mr Lloyd says, "Courses in engineering offered by the colleges are designed for students whose aptitudes and motivations are responsive to vocational incentives. Courses are related more to the everyday practice of engineering rather than to research and scholarship ; they are concerned more with the application of knowledge rather than with the development of knowledge...The university courses give more emphasis to generalisations and abstractions..."[51]. In actual subject content, university courses have more basic science "to permit a more fundamental treatment of engineering science and advanced engineering subjects"[52], while college courses give greater emphasis to the practice of engineering. Both university and college courses, however, have similar proportions of engineering science and advanced engineering, and colleges devote only slightly less time to mathematics, on the average, than do universities. "The high mathematics content indicates the common need for mathematics as a tool for quantitative expression in all courses"[53]. In most college courses there is a greater emphasis on liberal studies. Mr Lloyd comments on the considerably higher standard of the newly introduced engineering diploma courses of the New South Wales Institute of Technology than the old diploma courses of Sydney Technical College. Putting this in general terms, he says: "The engineering student of today undergoes a very much more rigorous educational experience than did students of earlier days. The forces which have brought this about are increasing standards of education generally within the community and the tremendous advances in engineering knowledge, the two having a cumulative effect. On the one hand, material has been displaced downwards into the secondary education period; students of today cover much of the mathematics and science in their secondary courses previously taken in their professional courses. On the other hand, the displacement of engineering practice material and replacement of descriptive matter has been accompanied by expansion and quantitative analytical treatment of engineering science and advanced engineering studies"[54]. One is reminded of the comment of the Wark Committee in its discussion of the differences between colleges of advanced education and universities. "While the university is likely to have a greater theoretical content in its courses, it must be recognized that if the diplomas are to provide an adequate education for a changing world, they too must contain a substantial measure of theory"[55]. Mr Lloyd points out the overlap between the colleges and universities. "Course content in the two types of institution is influenced by the attitudes and objectives underlying instruction. The universities are concerned with the development of knowledge through research while the colleges are concerned with the application of knowledge and the development of professional skills. A limited amount of applied research is carried out in some colleges and all university courses include the development of professional skills. There is an overlap between the two bodies and neither has a monopoly in either sphere"[56]. Interestingly, he finds that the Australian college diploma in engineering compares very favourably in standard of attainment with the pass degree courses in the United Kingdom and the United States[57].

Mr Lloyd helps set right misconceptions, such as the one that college engineering courses are more "practical" than those in universities. In actual fact, there is less specified laboratory work in many college courses, and less emphasis on organised vacation experience. For example, the Royal Melbourne Institute of Technology and other Victorian Colleges have abolished the requirement of concurrent practical experience for their full-time engineering courses. The actual meaning of "a more applied emphasis" in course content is shown by Mr Lloyd's comparison of the electrical engineering diploma course of the New South Wales Institute of Technology with the corresponding B.Sc.(Tech.) course at the University of New South Wales. The part-time diploma course, which is of the same academic duration as the part-time degree course (since 5 years of 36 weeks is equivalent to 6 years of 30 weeks), has the same contact hours in mathematics and chemistry, about half the physics, nearly the same engineering science and about 150% of the engineering technology contact time. As Mr Lloyd truly points out, "The contact time distribution reflects the emphasis upon application of knowledge in the diploma course, but with a firm base of mathematics and science"[58].

The need for three-year full-time engineering college courses (available also on a part-time basis), as well as four-year full-time university courses, was well illustrated by the situation in Adelaide, where in 1957 courses (of three years full-time or approximately six years part-time) leading to the degree of Bachelor of Technology were introduced in nine different branches of applied science and technology in what is now the South Australian Institute of Technology. Staff of the Institute were responsible for course teaching, but the degree was awarded by the University of Adelaide. In discussing the reasons for the introduction of these B.Tech. courses, in addition to B.E. courses, Mr D.W. Cox, of the Electronic Engineering Department, South Australian Institute of Technology, and Mr D.C. Pawsey, of the Electrical Engineering Department, The University of Adelaide, in an article entitled "Degree Courses for the Engineer and Technologist", mention the need for a shorter course with less rigorous requirements in the basic sciences than the four-year full-time B.E. course. They say further: "Differences in aptitude and inclination exist in students of engineering. Some have the type of mind which takes more readily to an academic study of the basic physical sciences and their engineering applications. Others have the type of mind which finds more interest in the practical application of known techniques. The former feel more at home in the B.E. course, the latter in the B.Tech. course. Both types are required in industry. The latter may be required in greater numbers than the former. It is held that many technologists have been gained for industry because of the availability of a degree course in technology which makes less rigorous academic demands on the students and which may be completed in a shorter time"[59]. The B. Tech. course in Electronic Engineering was proved to be meeting a need in industry by the increase in student enrolments, from 30 in 1957 to 164 in 1964. About 60% of the 1964 students studied part-time, and of these a majority were employed in the electronic industry. In their discussion of B.E. and B.Tech. courses, Mr Cox and Mr Pawsey emphasise: "It should not be thought that the provision of courses in both engineering and technology has as its aim the separation of the more intelligent from the less intelligent students. The aim...is to separate those who show greater academic ability from those who are more practical-minded"[60]. "The provision of both an advanced science-based course to equip engineers for research and development and a shorter course for more practically-minded students is...an efficient method of providing engineering graduates for the electronic industry"[61]. It should at this point be mentioned that the B.Tech. courses offered by the South Australian Institute of Technology are now disappearing and being replaced by Diploma (Dip.Tech.) courses (three years full-time), administered solely by the Institute and not connected in any way with the University of Adelaide.

In a paper entitled "Trends in Higher Technological Education and Developments in New South Wales", which appeared in the September, 1949, issue of the Journal of The Institution of Engineers, Australia, the content of most of which is, in some ways unhappily, as relevant today as it was then, Mr H.J. Brown makes the following sound observations: "When the training of scientists and technologists is under discussion, a question which usually arises concerns the demand in industry for this type of trained personnel. This approach to the problem would appear to be an entirely erroneous and unsound one. The law of supply and demand cannot be reversed to read the law of demand and supply. There was no general demand by the public for any of the new technological developments, such as the cinema, radio and television. From the supply of a few cinemas, radio and television sets, the demand arose. In the same way, industry cannot be expected suddenly to demand scientists and technologists. The supply of scientists and technologists must come first. As they permeate industry and their value is appreciated, so the demand will increase"[62]. In the same way, the supply of educational opportunities and facilities in the colleges of advanced education must precede the demand. Obviously, students' educational choices (between universities and non-university tertiary institutions) have in the past been influenced by the sub-standard accommodation and facilities for tertiary education in technical colleges. Because of this, the Wark Committee has stressed the importance of good sites and buildings, to help the public image of the colleges of advanced education. Mr L.W. Weickhardt of ICIANZ Ltd. believes that once the standard of diploma training is elevated by attention to staffing, buildings and equipment, additional numbers will be "attracted" to this form of non-university tertiary chemical training[63]. Even without these facilities, demand for diploma courses has been increasing. Dr H.S. Williams mentions the growth of demand for associateship courses in the Perth Technical College (now Western Australian Institute of

Technology)[64]. The New South Wales Institute of Technology has had to work on a quota system since its establishment, because of lack of accommodation. In 1967, when the new Commerce Diploma Course was first offered by the New South Wales Institute of Business Studies, only 25% of the applicants were able to be admitted. In Victoria, with its dual State secondary education system of high schools oriented to matriculation and the universities, and technical schools oriented to technical college diploma courses, an increasing number of high school students are transferring to the diploma courses after matriculation. At the Royal Melbourne Institute of Technology more now enter from high schools than from technical schools [65]. Some idea of the strong development of diploma courses in Victoria may be gained from the fact that Victoria produces approximately 40% of Australia's professional engineers, though only 28% of the country's population is resident in Victoria - a situation which Mr Lloyd attributes to the highly developed and decentralised system of colleges of advanced education in that State[66]. The number of diplomates admitted to Associateship of the Royal Australian Chemical Institute in Victoria over the four years preceding 1966 illustrates the same point, as can be seen from the following dissection of R.A.C.I. Associateships:

61 hold R.M.I.T. Diploma.
64 hold Diplomas from other Victorian technical colleges.
69 are from Australian universities.
45 are from other backgrounds (including overseas)[67].

The overlap between universities and colleges of advanced education in fields of study is one of the causes of the assertion that, given time, there will be no difference between colleges of advanced education and universities. But universities are not a monopoly and quite clearly are not satisfying all of the community's needs. The overlap is not, in any case, significant, since it is the content and approach of courses that is all important. Dr H.S. Williams speaks of the extension of technical education into an increasing variety of fields of study as one of the significant changes of recent years. "No longer is the argument so much on whether particular fields such as engineering should be in the university or the technical college as it was so few years ago. The difference is seen today in terms of methods of approach rather than fields of study. The need for a diversity of tertiary education is now more fully appreciated and was emphasized by the Martin Committee. It has become increasingly common to find university and technical college courses operating in the same general field but with differing emphasis, the university giving more weight to the scholastic approach and research, with the technical institutions concerning themselves more with the application of knowledge and with teaching as their prime function.

Technical education now reaches extensively into the field of commerce and business, and into the community services of health, education and welfare as well as the more traditional fields of engineering and applied physical sciences. Courses in technical institutions can now be found in biological sciences, social sciences, social work, educational administration, librarianship, art and design, and many other such fields. Whilst any one institution is unlikely to have all of these and some may have none, such variety will be encouraged by the Martin Report and subsequent Commonwealth Government action"[68]. Clearly there is need for some kind of rationalisation. But this is surely likely to occur naturally once other factors such as accommodation and facilities are equal, that is, when colleges of advanced education are as well equipped for their own particular functions as universities are for their different ones. Rationalisation is, in fact, already occurring. For instance, the variation from State to State in the field of medical technology mentioned by Mr B.E. Lloyd[69] will have lessened considerably by 1970, when the New South Wales Institute of Technology, as well as the South Australian Institute of Technology, should be offering a diploma course in medical technology. The process of rationalisation will be greatly facilitated in New South Wales by the establishment, under the Higher Education Act, 1969, of the Higher Education Authority, two of whose functions are "to promote the most beneficial and effective relationship between the universities and the colleges of advanced education" and "to take...steps...to promote consistency between the recommendations made to the Minister by the Advanced Education Board and the Universities Board"[70]. Naturally, the Australian Universities Commission and the Wark Committee are in favour of rationalisation, as can be seen from the following statement[71] in the second Wark Report:

> "The Australian Universities Commission and this Committee agree that rationalisation of university and college courses is desirable and will endeavour to

> encourage it as much as possible. In time this may lead to the transfer of some courses from one system to the other. Both colleges and universities may be expected to continue to conduct some courses in similar areas - for example engineering - but with subtle differences with respect to content, emphasis, approach and purpose".

In the context of rationalisation, it is significant that the establishment of colleges of advanced education has already resulted indirectly in revisions and improvements to existing certificate (technician) courses in most States. In New South Wales, certificate courses were established and designed specifically to provide training for technicians, but in some States they were subordinated to, and prejudiced by, professional level diploma courses. For example, in Victoria the engineering certificate courses were made up of subjects taken from stages of the diploma courses other than the final year. Their lack of suitability for training technicians has been shown by the small number who have received certificate awards. In Queensland, South Australia, Western Australia and Tasmania, engineering certificate courses have now been revised to meet the specific requirements of technician training, and, where necessary, have been completely separated from professional level training[72].

In States other than New South Wales, the diplomate or associate of non-university tertiary institutions receives the same recognition from professional bodies as the university graduate, provided that the diploma course is of true professional level. In Western Australia, for instance, the diploma courses of Perth Technical College are sub-professional, equivalent in standard to the certificate courses in New South Wales. The professional level courses lead to an Associateship of the Western Australian Institute of Technology, which developed from Perth Technical College. In New South Wales, the old Associatehip awards of Sydney Technical College were similarly recognised by professional bodies; and it is anticipated that the same will apply to the terminal awards of the new diploma courses of the New South Wales Institute of Technology. In the Institute's 1969 Handbook[73] it is announced that the Chemistry Strand of the Science Diploma course has been accepted by the Royal Australian Chemical Institute as meeting the minimum academic requirements for entry to corporate membership of the Institute, and that the Chemistry/Biology Strand of the same course is under consideration. It is also stated that the

Board of Examiners of the Institution of Engineers, Australia, has considered the entrance requirements and structure of the new diploma courses in Electrical, Electronic, Mechanical and Production Engineering and is likely to grant these courses professional recognition in due course (that is, after the conferring of the first terminal awards), provided that the Institution is satisfied with certain other factors, such as accommodation, facilities, quality of academic staff, associated with the provision of the courses. The Institution of Electronic and Radio Engineers, Australia, is also known to anticipate being able to recognise the diplomate of the Electronic Engineering Diploma Course.

Professional recognition, in the sense of admission to membership of professional bodies, must not be regarded as the be-all and end-all. Employing authorities are not forced to employ only those who are accepted by professional bodies. Dr H.S. Williams has pointed out that some courses which satisfy community needs may not necessarily receive recognition by professional bodies, but should, nevertheless, still be offered by colleges of advanced education, just because of community requirements[74]. It is interesting that the Australian Society of Accountants is now requiring graduates and diplomates alike to pass a qualifying examination to gain Society membership[75]. The aim of this is to distinguish those who wish to become professional accountants from those who use tertiary courses as a general preparation for careers in commerce and administration.

Though the award of professional recognition should not be allowed to become the only criterion of the worth of courses, the fact of such recognition of existing diploma courses in States other than New South Wales, and the near-certainty of professional recognition of the new diploma courses of the New South Wales Institute of Technology, establishes beyond doubt that colleges of advanced education are providing professional level courses. They cannot, therefore, be compared with the United States junior or community colleges rather than with universities, nor can it be claimed that their main concern is with sub-professional training. The sub-professional courses are the certificate courses, some of which may continue to be offered as separate entities by the colleges of advanced education, but, more probably, will remain with the technical colleges from which the institutes of technology or colleges of advanced education have in many cases developed. Mr B.E. Lloyd prophesied that "With the clarification of the role of colleges of advanced education in Australia in providing tertiary professional level education, it can be expected that education at sub-professional level will also become better identified and appreciated"[76]. There is clear evidence that this is indeed happening.

The prior existence of vocationally-oriented, professional level courses, with a different bias from university courses in areas of subject overlap, and the need for the much wider and stronger development of them in suitably recognised and equipped institutions such as colleges of advanced education are thus established beyond dispute. Business and industry, and, in turn, the community, which depends for its economic well-being on the successful operation of business and industry, need the product of the college of advanced education, whose training will have made him aware of the challenges and opportunities in the world of men and affairs, as opposed to the "ivory tower" of the research laboratory. But he cannot make his proper contribution in the community if his training has been "vocational" in the narrowest sense of the term; and this has been increasingly recognised. Mr B.E. Lloyd says, "The greater emphasis on general studies in most college courses (in engineering), in contrast to most university courses, could be interpreted as a further natural outcome of the different aims of each, that is, because the college courses are more concerned with application of knowledge, it could be inferred that graduates from them are more likely to be concerned with human relationships than are university graduates"[77]. The Jackson Committee on Tertiary Education in Western Australia came to the heart of the matter: "...Since technologists and professional men are immediately involved in applying knowledge to and in human society, they need an educational environment in touch as much with the humanities and social sciences as with the technologies"[78]. Hence the strong emphasis on liberal studies in colleges of advanced education, to which the Wark Committee devotes special attention in its first report, particularly in Chapter 8, "Liberal Studies in Colleges of Advanced Education"[79]. Mr R.E. Dunbar, former Director of The New South Wales Institute of Technology, in the Preface to the 1968 Handbook of the Institute, stresses that the liberal studies component of technological courses must be relevant and integrated. "The Institute has...recognised the value of including subject material which may not be of direct vocational utility. This material however does not constitute a selection of unrelated "humanities" subjects grafted on to a technical core, but rather that which has a meaningful relationship to the technical content of the syllabus and which is designed to widen the students' appreciation of the place that their own specialized professional field occupies in the broader social environment"[80]. The 1969 Prospectus of the South Australian Institute of Technology says of the programme of general studies electives in the courses leading to the award of the Diploma in Technology (Dip.Tech.), "General studies are intended to help students in self expression, and to relate professional studies to the social context in which the Diplomate will practise his profession"[81].

The importance of what might be broadly termed social competence, as an essential concomitant of professional competence, was emphasised in many ways by the group of employees (graduates and diplomates) and employers whose attitudes are recorded by Mr L.R. Parker. Qualities and abilities, the possession of which is stressed for the graduate/diplomate, include the ability to communicate, both orally and in writing, so that ideas may be transmitted to intelligent non-specialists; the ability to make decisions; and the development of "interpersonal skills"[82], the latter including an appreciation by the young graduate/diplomate that, in his professional work, he will be an agent of change, to which he may encounter resistance. His social understanding must be sufficient to enable him to appreciate the reasons for this and to handle the situation with care and tact. Some theoretical background studies in group dynamics and mathematical statistics were suggested for inclusion in the later stages of academic courses, in preparation for the managerial, as distinct from the technical, aspects of the young professional's work.

The words of Mr H.J. Brown nearly twenty years ago are still startlingly relevant today:

> "The study of technology to the highest level does not involve specialisation in the sense of narrowness. It is extremely unfortunate that the study of technology has incorrectly been assumed in some instances to mean something of a narrow character and unworthy of the term education. The modern view expressed in many quarters is that any course of training must include work on economics, business principles, industrial psychology, report writing and self expression, history and world affairs, industrial and labour relations, etc.

> These are not considered as additions to counter the technological subjects, but as integral parts of any course attempting to train men to take their place in the community.
>
> All too often in the past the benefits of education have been sought and used for personal and private profit, to the neglect of public and social service. It is now realised that higher education must inspire its graduates with high social aims as well as endow them with specialised information and technical skills. Teaching and learning must be invested with public purpose. To have some insight into the values and standards that men have found good in governing their lives, to be able to define problems and bring to their solution the habits of critical thinking, to be able to communicate ideas clearly, to possess the ability to deal with people in a friendly and considerate manner - these, more commonly than we think, perhaps, are the elements of vocational competence"[83].

It would appear that we are trying to accomplish now through the colleges of advanced education what Mr Brown and others set out to do through the University of Technology in Sydney some twenty years ago - produce professionally trained men and women endowed with vocational competence in its broadest and therefore truest sense, that is, endowed with social competence as well, and so able to make a worthwhile contribution in the community either as leaders or members of a team. In discussing the rise of the General Education Movement in the United States, in his book entitled, "Universities: Commonwealth and American, a comparative study", O.C. Carmichael says, "...the distinguishing characteristic of 'general' education lies in its realistic, objective and conscious approach to the problem of relating education to life"[84]. One of its major purposes is "to insure that the specialist has sufficient social understanding to make him willing to face the responsibilities of decision-making and effective in discharging them"[85]. It is surely just this purpose that is to permeate the whole approach in courses offered in colleges of advanced education.

Of the qualities needed and the opportunities offered in the world of industry and commerce, Mr H.J. Brown says: "I can assure you...that it is just as educative and even exhilarating to be developing systems and designing equipment to meet the practical needs of society, to be organising production within cost limits and time scales and solving the technical difficulties which arise in production, as it is to be searching for new knowledge. Far too many academics consider that to work as a chemist or physicist, or even as an engineer, in industry is to prostitute one's training and abilities. This is far from the truth. In most cases it requires a great deal of hard work, far more knowledge than academic training has supplied, and a wider range of abilities in order to be successful in industry"[86].

Human resources are increasingly deplored as the bottleneck for progress, and there is mounting evidence of the need to utilise every last bit of professional potential in the community, as the range and level of professional abilities required in the modern world continually increase. This involves a matching increase in the diversity of educational opportunity and provision at the tertiary level, to supplement and complement the contribution of the universities. It is for this purpose that the colleges of advanced education have been established. Since they are providing tertiary professional training, they must clearly be equal in quality to the universities, differing from them sometimes in areas of study and always in the approach and emphasis of their courses.

From our study we became convinced that the concept of the college of advanced education as equal to, but different from, the university is valid, and that it is realistic to expect colleges to produce in sufficient numbers the new end-product envisaged by the then Senator J.G. Gorton, Minister for Education and Science, at the National Seminar on Planning for Colleges of Advanced Education in Hobart in November, 1967 - a liberally educated technologist, willing and able to apply his tertiary education for the benefit of his country as well as himself. Further, it appears that it is in the non-university area that the greatest development in tertiary education is needed, or, as Professor W.D. Borrie has put it, from the demographer's as well as the educationist's point-of-view:

> "In Australia there is a gap between the people leaving our schools, those going to our universities, and the growing number of people - 130,000 by 1976 if we continue as we are doing - left somewhere between schools and universities. This is the area in which I think technical training up to professional level is the real nub of our educational problem"[87].

Most of our investigation into the nature of advanced education was made at the beginning of our project.

Nevertheless, we were continually aware of developments taking place in this educational area during the whole of the year occupied by our project. Our initial conclusions regarding the "raison-d'être" of the C.A.E.'s have been substantially confirmed, and the difference in purpose, approach and emphasis of C.A.E. from university courses has been made more explicit and so has become more meaningful. As we shall illustrate briefly, the six basic differences[88] between colleges of advanced education and universities, described in the first Wark Report, have been reinforced in subsequent publications and in what is taking place in the colleges themselves. On the other hand, the Wiltshire Report, despite its very lucid exposition of "The Purpose of Advanced Education"[89], appears to us, in its discussion of the nature of courses in advanced education and its recommendations for nomenclature of awards, to have added to, if not actually generated, certain confusions.

The concept of advanced education as "equal to, but different from" university education may well have suffered from the over-simplification inherent in such conciseness. The second Wark Report perhaps assesses the real situation more sensitively and so more accurately when it says:

> "Thus as part of the system of tertiary education the colleges will need to match a number of characteristics of the universities. For example, it is necessary to place a similar emphasis on the responsibility of a student for his own learning, for staff to have qualifications and experience of similar quality even though of different nature, and for buildings and teaching facilities to be of similar standards"[90].

The purpose of the colleges of advanced education and the breadth of their responsibilities are expressed very clearly in the second Wark Report:

> "The purpose of the colleges is to train students so that immediately after graduation they may play an effective role in commerce, industry, the public service or the arts. The universities also offer vocational training but they have another function as well - the discovery and expansion of knowledge. It is the intention of the States and the Commonwealth, with which we are in complete accord, to encourage the colleges to place their emphasis on the application of knowledge"[91].
>
> "The colleges' involvement is with technology, which may be defined as the application of knowledge to

> satisfy human need. The concerns of technology are therefore as wide as those of human need, and embrace the application of knowledge in the social sciences, languages, art and design, as well as in the physical and biological sciences and engineering"[92].

The Sweeney and Wiltshire Reports, as well as the second Wark Report, all stress the need for maintenance of the closest possible contact between the colleges and industry. The word "industry" is well used throughout the second Wark Report as a convenient short term to cover "primary and manufacturing industry, commerce, government, and community services"[93]. Such contact may be established and maintained in a variety of ways: through exchange of staff, "the establishment of college councils with strong representation from industry and commerce, the use of advisory panels at course and subject level, the encouragement of academic staff in undertaking consulting work, the participation in specific industrial research or surveys, and the arrangement of conferences involving industry and commerce"[94]. The Wark Committee goes so far as to say, "Evidence of effective outside contacts should be used in addition to evidence of teaching ability when assessing potential of staff members for promotion"[95].

The employer-employee group who participated in the study in employment attitudes reported by Mr L.R. Parker also stressed the need for close industrial contact. Among their observations were these[96]:

> (a) Advisory boards of studies should be chaired by men from commerce or industry and the decision to convene the advisory board should not be left to the academic members.
>
> (b) The staff of colleges of advanced education should be actively encouraged to grapple with the problems of commerce and industry by engaging in paid consulting work. The teaching load should be arranged to make this possible.
>
> (c) Colleges of advanced education should ensure that close contact is maintained between their student counsellors and the executives in commerce and industry.

Already there are indications that requirements for higher awards or degrees in C.A.E.'s will also help maintain industrial contact. For example, candidates for the Diploma of Master of Technology in Metallurgy at the South Australian Institute of Technology, in addition to possessing an acceptable Diploma or Degree, must normally have had at least one year of professional experience following graduation. They must undertake a programme of formal study (occupying one day a week for a year for a part-time student) and also a major project (occupying two days a week for a year for a part-time student). The project "will deal with a problem of direct interest to the student's employers, and will be carried out at his place of employment as well as in the Institute. Supervision will be jointly undertaken by a member of the School's staff and a senior member of the technical or production staff of the student's Company"[97]. Similarly, the Victoria Institute of Colleges, in its "Interim Statement on the Award of Higher Degrees", announces its Council's support for research proposals "which provide for some form of joint supervision of the research, investigation or development project by representatives of the college staff and of the relevant industrial, commercial or professional field"[98], since "It is the Council's desire that the research studies undertaken for the award of higher degrees of the V.I.C. should result in a strengthening of the relationship between the affiliated colleges and industry, commerce and the professions"[99].

The Sweeney, Wiltshire and second Wark Reports all stress the importance of good teaching; and in the study in employment attitudes reported by Mr L.R. Parker two recommendations[100] are made in regard to good teaching. These are:

> (d) Each college of advanced education should include a studies research unit charged with the task of ensuring that the best educational techniques are being practised.
>
> (e) There should be a substantial salary loading to recognize above average teaching skills in the staff of colleges of advanced education.

One of the recommendations of the Conference on Planning in Higher Education, held at the University of New England, Armidale, in August, 1969, was "that immediate attention be given by the universities and colleges to the question of providing greater opportunities for transfer of students at all levels"[101]. This is a matter of considerable importance, to which attention has already been directed in some States. The Wiltshire Committee recommends the establishment of a national body designated the "Australian Council for Accreditation of Awards in Advanced Education", "to accredit awards in advanced education"[102]. If this were set up, the status of all C.A.E. terminal awards would become clear, and this would undoubtedly alleviate part of the problem of transfer of students from C.A.E.'s to universities and vice versa, as well as remove many unfortunate confusions in the public mind. We are confident that this whole question of status of courses and students in C.A.E.'s will, given a little longer time, be satisfactorily resolved. We feel sincerely that C.A.E.'s are making a valuable contribution to diversity in tertiary education and are here to stay as a genuine and viable alternative to university education.

The Wiltshire Report divides C.A.E. courses leading to a first qualification into Categories A and B (the latter sub-divided into B1 and B2), courses leading to a higher qualification into Categories C (sub-divided into C1 and C2) and D, and suggests the following nomenclature for terminal awards:

Category A.	A bachelor's degree.
Category B1.	Advanced diploma in ...
Category B2.	Diploma in ...
Category C1.	Diploma in ...
Category C2.	No recommendation.
Category D.	Master's degree.

It is stated that Category B will comprise the bulk of the work of C.A.E.'s. From the description given, it appears to us that courses in Category B1 are the normal, professional diploma courses offered to date in C.A.E.'s, and that to confer for their successful completion the award of "Advanced Diploma in ..." will simply be confusing, since these are the basic (three-year full-time or equivalent part-time) diploma courses. We are surprised to find the statement under Category B2 that "Many courses offered by the colleges will have limited objectives and will be at the sub-professional level"[103], and that the terminal award recommended for such courses is "Diploma in ...". We were under the impression that sub-professional work was gradually being phased out of the C.A.E.'s; for example in Victoria, where the Wark Committee reports:

> "An important feature of the triennium (1967-69) in Victoria was the continuing effort to separate tertiary from non-tertiary activities.
>
> In most technical colleges in 1966, tertiary courses were carried out side by side with non-tertiary (secondary, trade and certificate) activities. Although there is general agreement that tertiary work should be

> geographically separated from non-tertiary work and that each should ultimately be placed under a separate administration, there is in some instances no decision with regard to the timing. It is the policy of the Victoria Institute of Colleges to achieve separation at the earliest possible opportunity"[104].

At first we found the courses in Category B2 somewhat undefined, and wondered, for instance, how they would compare with the post-certificate and higher certificate courses currently being offered by the New South Wales Department of Technical Education. We had noted the reference of the second Wark Report to higher technician courses and its expressed belief that "the colleges must increasingly concern themselves with these courses"[105], and wondered whether these were the Category B2 courses of the Wiltshire Report. Later in the latter Report we read that "the matter of technician training below tertiary level lies outside the scope of the present Report"[106], and the recommendation that the term "diploma" should be abandoned "unless the course is mainly at the tertiary level"[107]. We consider it both inept and confusing to use the terminal award of "Diploma in..." for any course that is not wholly at the tertiary, that is, professional level. We are aware, as the Wiltshire Report mentions, that in some States there exist a small number of Advanced Certificate courses which receive support under the States Grants (Advanced Education) Act, 1967, though the post-certificate and higher certificate courses of the New South Wales Department of Technical Education do not receive such Commonwealth support. However, we find both difficult and confusing the distinction between technician training at tertiary level and below tertiary level. To us the term "technician" implies sub-tertiary or sub-professional, and we think that the Wiltshire recommendations for the awards of "Diploma in..." and "Advanced Diploma in..." will cause even greater confusion than exists at present in the public mind.

It seems to us that there is now a definite intention to include sub-professional as well as professional courses in at least some C.A.E.'s, provided, presumably, that in them, as the Wiltshire Report suggests, "the student reaches a point which would be the equivalent of two years' full-time study at tertiary level". Sub-professional courses are clearly not "equal to, but different from" university courses. However, their availability does not affect our concept of the C.A.E., provided that, as seems certain, the preponderance of courses offered are at the professional level. Moreover, we gather that the Wiltshire Report is referring mainly to Category B1 (3-year full-time, or equivalent part-time, courses) when it states that Category B will comprise the bulk of the work of C.A.E.'s. The purpose, approach and emphasis of education in the C.A.E.'s is perfectly clear, and many of the means by which the special objectives of advanced education may be kept in sight have been made perfectly clear too. For courses that are genuinely "equal to, but different from" university courses, we do not think it significant whether the terminal award be a degree or a diploma. This is a subordinate issue. So far as the role of the library in the C.A.E. is concerned, it is the purpose, approach and emphasis of the courses, as exemplified in the learning-teaching methodology employed, that is important. Any difference in library provision for the first award courses designated as Category A, B1, and B2 is insignificant. In our opinion, it is quite wrong that the Wiltshire Report mentions library facilities only for courses in Category A.

2 LIBRARY IMPLICATIONS OF THE COLLEGE OF ADVANCED EDUCATION

The college of advanced education is a tertiary institution offering professional education comparable in excellence with that of the university, but different in the orientation of its courses, this difference reflecting the occupational expectations of its students. Its products must be trained and willing to assume responsibilty for the development of the increasingly complex goods and services required by society. The emphasis of the C.A.E. is thus on the problems and needs of industry, commerce and society. It has come into being because of the special need of the times for technologists with a liberal education and a substantial appreciation of the needs, aspirations and expectations of human beings, as well as a high degree of adaptability in a changing environment. Though the rate of this change cannot be calculated, it is safe to assume, from the experience of the last few decades alone, that it will increase rather than decrease. The student's equipment for his working life (say 40 years) must therefore include not only the essential basic professional knowledge and skills of today, but an ability to adapt and modify these in changing circumstances, and above all, to continue learning on his own, so that the knowledge he has gained in his course will not quickly become out-of-date. He must be given training that will help him to solve problems, make decisions, successfully communicate with and handle people in situations that cannot now be predicted. As with self-learning, these abilities must be cultivated and developed through the design of course structure and content conducive to their attainment, not just hopefully expected as a by-product of exposure to a course of education at tertiary level. It is the special task of the C.A.E. to keep in touch with the needs and actual conditions of industry, commerce and society, and remove as far as possible the barrier that so often exists between the tertiary graduate and the working situation in which he later finds himself. The diplomate of the C.A.E. should thus be able to make an immediate, as well as a continuing, contribution in his chosen profession and the larger community of which he forms a part.

It is clear that the type of end-product envisaged by the C.A.E. can be achieved only if there is a reduction in formal lectures and more time given to the student during his course for independent work, both self-learning and application of knowledge acquired. It is also clear that such independent work cannot be attempted without access to substantial library resources, and, equally, without professionally trained and experienced library staff who are able to help the teacher and the student exploit the resources of the library, and are enthusiastic in their desire to do so. If the C.A.E. is to achieve its objectives, the library must be equipped and ready to play as active a role with the teaching staff and students, as teachers play with their students.

The contribution of the library to the C.A.E. will thus be:

1. to support teaching;
2. to participate in teaching by systematically helping both teachers and students to exploit as fully as possible the resources of the library and to be aware of sources of information, wherever and in whatever form they exist;
3. to make possible study, particularly individual study and self-learning;
4. to participate in the student's general education, by stimulating extra-curricular reading and activities.

The general specifications for the library to make its proper contribution must include:

(a) books;
(b) a building;
(c) staff.

Books must include all printed material, e.g., monographs and serials, and non-printed material, e.g., maps, music scores, microforms, audio-visual material such as tapes, records, films, and cards and tapes for computers.

The building must provide suitable housing for all types of resource materials, i.e., non-printed as well as printed material, and must permit the performance of the conventional, well recognised library functions of supporting teaching and making study possible, as well as library participation in teaching, which will perhaps be the special characteristic of the C.A.E. library, or, at least, the library function which needs to be developed at greatest depth.

Staff must include those needed to acquire, make available and look after all types of resource materials, and to perform the conventional library functions as well as those associated with active library participation in teaching.

There is clearly a need to calculate some type of standard requirement for each of the three components which make up the library - books, building and staff. So far as library support of the conventional type of teaching programme (lecture plus assignment) in a tertiary institution is concerned, the experience of individual universities and colleges as well as overseas standards can help provide some guidelines. But the full integration of the library in the teaching programme, resulting in active library participation in teaching, requires revolutionary thinking and the formulation of entirely new standards for books, buildings and staff.

In our project, we have considered carefully guidelines or standards for books and staff, but not for buildings.

3 THE CRUCIAL IMPORTANCE OF THE LEARNING TEACHING PROCESS AND THE VITAL NEED TO DEFINE IT

The Wark Committee in its second report says, "Educational emphasis is increasingly on the learning rather than the teaching process "[108]. Undoubtedly the quality of the total learning-teaching process in the colleges of advanced education will be the critical factor in the achievement of the aims of advanced education.

Perhaps nowhere has the special role of advanced education been made more explicit than by Mr P. W. Hughes* when Acting Director General of Education in Hobart, in his comments on the basic paper relating to "The Role of Colleges of Advanced Education in Australian Adult Education", presented by Dr D. W. Crowley, Director of the Department of Adult Education in the University of Sydney, at the National Conference on Adult Education arranged by the Australian Association of Adult Education at the University of New England in August, 1968. It should be noted that "adult education" is used in the specific sense of community, extension education, a field that is categorically rejected for colleges of advanced education by the Wark Committee[109]. The fundamental educational approach of the C.A.E. is made clearest by Mr Hughes's attitude to refresher courses in C.A.E.'s. He says,

> "... For people who have grown up through the C.A.E. type of education as now conceived, refresher courses in terms of initial instruction should rarely be required. One of the basic aims of advanced education is to teach the techniques of information handling and develop an attitude favourable to sustained independent learning throughout life. Certainly refresher courses will facilitate sustained learning but the important thing is that the advanced education graduate will see continual growth of the store of information available to him as a normal and expected phenomenon with which he has been prepared to cope. But he will do this in selective fashion, absorbing the relevant and discarding the irrelevant until time or changed circumstances give it relevance to his endeavours.

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For the person who has not had such an education, the great contribution which advanced education can make is not the type of refresher course which merely supplies more information destined for early obsolescence but courses in information handling of fundamental nature and of enduring validity"[110].

Interestingly, Dr Crowley makes a point of mentioning the conference syndicate's rejection of Mr Hughes's contention that there would be little need to retrain the graduates of the C.A.E.'s, mainly on the grounds that technological change is now so rapid that educational qualifications are out-dated within a few years. The fact that they are is one of the strongest arguments for the educational approach of the C.A.E.'s. Perhaps what Dr Crowley and the syndicate too were really expressing was misgivings about the peculiarly difficult task of developing in the student adaptability and the capacity for self-learning for the rest of his life. "My impression from teaching experience at all levels", says Dr Crowley, "is that the proportion of the population which can adapt previous teaching to new circumstances is relatively small. Few can think for themselves to this extent: most people have to be shown or taught the modifications that become necessary in changed conditions"[111]. Mr Hughes's reply would undoubtedly be that such people have not had the benefit of "advanced education", and that it is the special task of C.A.E.'s to design courses whose structure, content and approach are conducive to the attainment of the abilities associated with self-learning and social as well as vocational competence, abilities which must be carefully and patiently cultivated, over a period of time.

The challenge to the C.A.E.'s is enormous, if they are to produce the type of end-product that is envisaged and is so badly needed in the increasingly complex world of to-day. The concept of advanced education demands a revolution in the conventional learning-teaching process. This in turn will demand a revolution in the contribution of the library, which is part of the learning-teaching process.

For the library to function adequately as part of the learning-teaching process in the college of advanced education, it is necessary for the other parts of the process to be clearly understood. This means defining the educational objectives of the institution, or, in current terminology, producing its educational specifications. This is critically bound up with teaching method. The Wark Committee in in its first report stressed the importance of good teaching, stating that "quality in teaching should be regarded as of paramount importance"[112]; that in qualifications and selection of staff the teaching element should predominate[113]; and that "the staff should have studied quite deeply the methods of communication both to and from the student"[114]. Moreover, it commended the in-service teacher training programmes for newly appointed lecturers in some States. In its second report, it re-iterated its stress on good teaching. "We would encourage and support the development by colleges of means whereby staff members could improve their knowledge and skills as teachers, and receive adequate recognition in terms of quality of performance"[115]. Later in the second report it says:

> "The teaching function of the colleges is of primary importance. It is therefore highly desirable that all lecturers receive training in educational methods. Some colleges insist that new professional staff without previous teaching experience undertake an appropriate course before commencing teaching. This is a practice to which other colleges might give serious consideration, possibly in combination with one another. Refresher training in educational methods for experienced staff is also necessary if they are to keep up to date and become competent in modern techniques and approaches to teaching and learning"[116].

However, even the colleges which make provision for some form of teacher training do not appear to be taking the lead in investigating and developing the sort of teaching methodology that will produce the type of professional man the Wark Committee envisages - one who not only possesses a knowledge of his subject but who can think for himself and act upon the results of his thinking. Though there is undoubted use in colleges of advanced education of seminars and assignments requiring varying degrees of independent work on the part of students, particularly by individual lecturers, there is no evidence of an overall change in educational policy regarding teaching method. This still remains basically that of lecture plus assignment, which in the universities, with their problem of increasing numbers of students, has thrown intolerable strains on libraries and resulted in the provision of "closed reserve collections", which are massively used by undergraduate students, in all too many cases to the exclusion of almost everything else in the library. And this in the guise of education!

Changes in teaching methods are implemented by individual teachers. If C.A.E. lecturers in their student days at universities have themselves had no experience of anything other than conventional teaching (that is, the lecture plus assignment method), and if their horizons are not later broadened by study of other teaching methods more suited to producing the professional man or woman equipped for life-long self-learning, who is so badly needed in the increasingly complex world of today, how can they be expected to do other than follow the only method that is familiar to them, thus perpetuating practices that are no longer adequate now, if indeed they ever were? Luella Snyder, in her report on the use of library resources by university students, produced as part of the Inter-University Program in Teacher Education conducted at Cornell University, Syracuse University, the University of Rochester, and the State University of New York at Buffalo, says:

> "The attitudes, knowledge, and skills that they (prospective teachers) develop as students at the university will determine those they will be able to foster in their own students. "We teach as we were taught" is a cliché, to be sure, but like many clichés it contains a solid core of truth. The kind of teaching students experience undoubtedly affects the kind of teaching they will do"[117].

The Queensland Institute of Technology, Capricornia, has set up a twelve-year Educational Research Programme entitled SAIL (Sustained Adaptable Independent Learning) to evaluate educational objectives and methods. But isolated efforts are not enough. Every C.A.E. needs a "studies research unit"[118], charged with the responsibility of continuously reviewing and evaluating the educational objectives of the institution, the methods being used for their accomplishment and the degree of success achieved. And even this is not enough. Something else is needed in all C.A.E.'s, perhaps an in-service teacher training programme in each that includes study of teaching method, the main purpose of which is to encourage and equip the student to continue "self-learning" for the rest of his life. In any such training programme a study of the potentialities and uses of library resources would necessarily form a major and continuing strand. To quote again from Luella Snyder's report:

> "Another target group, and quite possibly the most difficult to reach, is the university faculty. How many faculty members are thoroughly familiar with the services of the library? How many are familiar with

> a broad range of resources to which they can direct their students? How many regularly review the holdings in their own and related fields or consult with the librarians about the problems students may have in completing papers and projects? How many know how to make good use of library resources themselves? Librarians report that members of the faculty do not always use the library skillfully. If they themselves have inadequate skills, can they foster skills in their students? If their attitude is one that discounts the contribution of the library, will their students have any higher opinion of it? Do they teach for today only, with no thought of preparing students to continue to learn even when they are no longer in a formal learning situation?"[119]

Professor Ernest Roe, Professor of Education at the University of Papua and New Guinea, is strong in his condemnation of the failure of educators to make adequate use of the library as a teaching instrument. He says:

> "It is transparent that educators have a sorry record in using the library as a teaching instrument. There are, of course, outstanding exceptions to this generalization, but these are mostly cases of individual teachers in well-favored institutions which are known for lively and imaginative personnel. At the university level the situation is particularly bad. Here, faculty members may be highly competent at using the academic library for conducting research and pursuing individual study, but many are incompetent, indeed uninterested, in using this same range of tools in their teaching"[120].

Norman Beswick makes the same point about the subject-tutor in a British university. "...All too frequently, the subject-tutor - himself conservatively educated and interested primarily in his discipline rather than in the wider perspectives of education - proceeds in his work with nothing but a long list of recommended books, thus requiring of the student little more than the ability to use the author catalog or to see a title on a shelf"[121]. Thus, though the undergraduate undoubtedly reads widely and does very hard and able thinking through discussing and debating during his course, "when he comes to the place where he must turn his attention to an alien subject field, he is, like his subject-tutor before him, bewildered and lost. In this process he may achieve his Bachelor's degree without even handling a bibliography, a periodical index, or an abstracting journal"[122]. Yet, says Norman Beswick, "it would take only a minor adjustment in teaching method to see that an undergraduate learned to discover, as well as to read, think, and debate. Such points need to be quietly programmed into a succession of courses"[123]. The experience of Patricia Knapp as Project Director of the Monteith College Library Experiment is particularly relevant and informative. Monteith College was established in 1959 as an experimental college of Wayne State University, Detroit, with three principal objectives: general education, independent study and the provision of the atmosphere of a small college. Apart from office buildings and a small student center, it has no separate physical premises; the students use lecture rooms and other facilities of Wayne State University, including of course the libraries of the University. In April 1960, Wayne State University entered into a contract with the United States Office of Education to conduct at Monteith College a research project aimed at developing a more vital relationship between the library and college teaching, or, in Mrs Knapp's own words "an experiment in coordination between the library and teaching staff to change student use of the library"[124]. Based on the incontrovertible premise that "Traditional college instruction fails to exploit fully the library resources available for it and that the average college student's experiences with the library constitute a limited and fairly insignificant part of his education"[125], the ultimate objective of the project was "to stimulate and guide students in developing sophisticated understanding of the library and increasing competence in its use"[126], the term "library" referring not to any specific library, but signifying "the vast, complicated network through which society attempts to organize its records"[127]. Patricia Knapp had always been convinced that "Competence in library use, like competence in reading, is clearly not a skill to be acquired once and for all at any one given level in any one given course. It is, rather, a complex of knowledge, skills, and attitudes which must be developed over a period of time through repeated and varied experiences in the use of library resources"[128].

To carry out the pilot project, certain appointments were made: a research director, half-time (Mrs Patricia Knapp, who was executive secretary for Monteith College in the other half of her time, having previously been Assistant Librarian of Wayne State University); a research analyst, half-time; a project librarian, full-time; a research assistant, a secretary, and a number of students, mainly Wayne graduates, who, under the supervision of the project librarian, acted chiefly as bibliographic assistants to the faculty. The research director, research analyst and project librarian participated with the teaching staff in their planning of College courses. During the time-span of the project, 1960-62 the College student enrolment ranged from 300 to 700, and the faculty size from 15 to 30.

Although many individual imaginative library assignments have been devised elsewhere, the Monteith project was new in that it provided a systematic series of assignments, ten in number, covering the students' three broad areas of subject interest - social sciences, humanities and natural sciences - and extending through the whole of the students' four-year course.

It would appear that the Monteith Library Project was carried out under as nearly ideal conditions, that is, in as nearly controlled an environment, as could ever be achieved - a new college of general education, committed to independent study, a small student enrolment, new faculty, small in number, engaged in planning new courses. Yet Patricia Knapp stresses throughout her report on the project the crucial importance of the attitude of teaching staff. If they thought the library assignments valuable, their students did also, and vice versa. It was envisaged that six years would be needed to implement and appraise the library programme devised during the pilot project. The first year would be devoted to "planning, preparing, and pretesting assignments and instruments for gathering data on the operation and effectiveness of the program"[129], with students enrolled in the College during that year being used for one trial run of the sequence. "The next four years would be needed to enable one entering class to experience the entire sequence, as developed in the pretest year. The sixth year would be devoted to analysis and reporting"[130]. It is a shock to learn that this programme was never implemented, for reasons not entirely known, but involving change of teaching staff at Monteith College and consequent lack of support for the programme. Patricia Knapp made available her report on the pilot project in 1964 (later published by Scarecrow Press in 1966), and in 1965 became Associate Professor of Library Science at Wayne State University.

In view of the eventual failure of the library programme, some of Patricia Knapp's thinking expressed in 1956 is particularly interesting.

> "Competence in the use of the library is ... a complex of knowledge, skills, and attitudes not to be acquired in any one course but functionally related to the content of many. It should, therefore, be integrated into the total curriculum. But it cannot be so integrated until the faculty as a whole is ready to recognise the validity of its claim and to implement this recognition through regularly established procedures of curriculum development. Logically, then, the faculty as a body, or through its appropriate committees, must implement the objective. It is probably true, on the other hand, that at present the college librarian is more conscious of the inadequacy of present instruction than is any other member of the faculty. Furthermore, he has the advantage of a broad perspective on the whole curriculum.
>
> For these reasons, the librarian should accept the responsibility of initiating the program, remaining constantly aware, at the same time, that ultimate implementation must come through the teaching faculty. In other words, the librarian must convince the faculty that library instruction is necessary; he must educate the faculty on the potential role of the library and assist it in planning instruction. And he must do all this with consummate skill and tact"[131].

In 1969 it should surely no longer be necessary for the librarian to don kid gloves and undertake the delicate task of convincing the teaching staff that the library has a vital contribution to make to the educational programme of the college. The learning-teaching process should by now be recognised as seriously inadequate without the library's contribution. There is need for continuous communication and cooperation of the closest kind between what Luella Snyder has called "library-minded educators" and "education-minded librarians"[132], with the aim of increasing the effectiveness of the learning-teaching methodology; but the recognition that the library is an indispensable part of the educational process should in 1969 be complete. There has, in fact, been a growing awareness over the last decade of the potential of the library; the problem is now perhaps rather a "how-to-do-it" one, how to integrate the library into the educational programme; and the requirements for doing it have not yet been thought through, let alone faced.

Thoughts of Patricia Knapp's expressed recently are also interesting, particularly as we know they are the result of mature, if in part rather bitter, experience.

> "Since the major implication (of certain studies by librarians on college students' use of the library) seems to be that the faculty, or the course is the key to students' reading or use of the library, some academic librarians have devoted major efforts toward attempts to persuade the faculty to increase the library's involvement in their instruction. My own experience with an attempt of this sort has convinced me that it has great potential but that it can achieve significant results only at considerable cost. It requires more staff and better staff, librarians who have real understanding of the educational process and boundless perseverance and commitment. And it requires much better knowledge than we have at present of the function of the library, that is, the organized records of society, in the teaching-learning process"[133].

One other example of the importance of teaching methodology and the attitude of teaching staff is worthy of mention. Lee Sutton, Librarian of Parsons College, Iowa (a four-year, coeducational, private, liberal arts college) reports[134] how he convinced the Deans and faculty senate of the advantages of library-oriented study, and it was agreed that term papers or equivalent library projects should be included in all upper division courses and selected courses in the core. But the scheme came to grief, because most of the faculty members had had no experience of this method of teaching in their own undergraduate days, and so were unable to use it themselves. Lee Sutton emphasises the need for faculty understanding and involvement in devising courses "down to the lowest instructor"[135].

The ultimate in library integration into the college is the concept of the "library-college" in the United States, where the distinction between faculty and librarians disappears, all faculty being librarians and all librarians faculty. It should be remembered, however, that a library-college is by definition small, with a maximum student enrolment of perhaps 500 and a faculty size of about 30. Though there is as yet no general agreement on how far the total library-college concept is desirable and practicable, there is increasing agreement by both educators and librarians on the need for close association between the classroom and the library. While it is not suggested that we should attempt in Australia to go "all the way" with the library-college idea or that the degree of detail in Patricia Knapp's approach is necessarily required, it is strongly suggested that much current talk about the library playing an active role in colleges of advanced education is mere lip-service to an idea that, except in isolated areas, has to date received only the most superficial consideration from administrators and teaching staff. Not even a start has been made on thinking through the implications in teaching methodology, and in quality and quantity of library staff required. It is not simply unrealistic, but a positive disservice to overworked librarians, who have tried in so many piecemeal ways to increase the library's contribution to the teaching programme, to stress the importance of the library and to talk enthusiastically of opportunities for experimentation and challenges for librarians, without at the same time stressing the accompanying cost. The total challenge is of course much deeper and involves the entire learning-teaching methodology in colleges of advanced education, with their special responsibility to develop the type of adaptable, professional end-product needed in the community of today.

The Wark Committee has recommended that at least $100,000, that is, one-quarter of the sum of $400,000 requested from the Commonwealth Government for the 1970-72 triennium for research and investigation into problems of advanced education, be devoted to "an integrated project on educational technology"[136]. In more than one place in its second report, it names investigation of educational technology as first priority for the 1970-72 triennium. Study of the application of recent developments in educational technology to the Australian scene will include "multi-media methods of presentation" and "comparative studies of the effectiveness and costs of various teaching and learning processes"[137]. The Wark Committee's concern with the learning-teaching process in C.A.E.'s is abundantly clear. Nevertheless, we wonder whether the proposed integrated project on educational technology will tend to be concerned with techniques rather than concepts, so that the basic philosophy and objectives of advanced education may not be probed in sufficient depth. Since the special challenge to the C.A.E.'s lies in the learning-teaching process, we recommend to the Wark Committee that it give consideration to the formation of a Sub-Committee on the Learning-Teaching Process, which would collaborate with its Library Sub-Committee.

Many C.A.E. administrators feel that their libraries should play a vital role in their colleges, though they are not quite sure how this is to be accomplished. Librarians share the same feelings and uncertainties. There is a concern on the part of some C.A.E. administrators that libraries should house non-book as well as book materials and be re-named "resource materials centres" (or some variant of this) to signify that their collections have been so expanded. Undoubtedly libraries should provide resource materials in whatever physical form they exist, though why a change of name to American terminology (which not all Americans themselves applaud!) should be necessary is not at all clear. The term "library" can surely cover all resource materials, whatever their physical form. There is undoubtedly a feeling that the inclusion of a wider range of resource materials will result in a more enlightened learning-teaching process. But this is not necessarily so. Professor Roe points out the grave pitfalls of such an assumption from his observation of "expanded libraries" in schools in the United States. He says:

> "The emphasis in IMC's (Instructional Materials Centers) can be on directed activity, on instruction organized by teachers and librarians down to the last detail, with minimal development toward *self*-instruction and *self*-direction by the individual student.
>
> It is possible for these library complexes, with their wide range of educational materials, to give an *illusion* of freedom; the very variety plus the silence or absence of the continually talking teacher make learning appear independent. A highly organized materials center...can be as restrictive in terms of the student's ultimate capacity for education as the teacher lecturing from a single textbook.
>
> Thus, educators can pay lip-service to modern ideas and methods...But do the physical plant, the organization, the change from classroom activity, in themselves guarantee that a significant educational advance is being made?"[138]

Professor Roe's observations simply stress that it is the educational method, or the use made of educational media, that is all important. Non-book materials do not have greater intrinsic value as media of communication and education than book materials, so cannot of themselves better equip the student for "lifelong self-education"[139].

The same sort of warning is sounded in the report on a study undertaken by the Historical Evaluation and Research Organization (HERO) in the United States, "to develop a research program for the design development of modern college libraries"[140]. In the course of the study, eight learning centers, "four organizationally integrated learning centers" and four "informal learning centers", were visited. All such centers are "dedicated to the objective of fostering independent study and encouraging individual progress"[141]. Yet, in the very institutions that are dedicated to promoting independent study, the very real danger exists that such independent study is, in actual fact, being inhibited, for "the procedures for making materials available to students were such, at least in some instances, that students could be easily satisfied with the specific materials made available to them by their professors, and were given little incentive to look elsewhere for other sources of information or ideas. This would suggest that there is a danger that unimaginative adoption of the learning-center approach will lead to spoon-fed education. This possibility and its dangers should be explored, and antidotes developed which will encourage teachers and students to seek exploration in all available resources, book and non-book"[142]. It is a strange, but, nevertheless, undoubted fact that the very reverse of what is aimed at may, in fact, be taking place, a situation which emphasises the vital need for depth of understanding of the learning-teaching process.

It is difficult to assess the role of the library in a total learning-teaching process that has not yet itself been clearly defined, since the library is an integral part of the process, and its function is essentially dependent on the other parts of the whole. The attitude of the teacher to the library, his knowledge of library resources and his understanding of the contribution the library can make to the educational process are critical factors. Undoubtedly the quality and quantity of available library resources, and, perhaps even more, the behaviour of library staff, as shown in their desire and ability, or otherwise, to integrate the library into the educational programme, influence the attitude of the teacher. It is because of this that so many librarians in educational institutions have sought not only to develop better collections of resource materials, but, in every possible way, within the limits of staff resources, and sometimes beyond them, to increase the active role of the library in the educational programme, by providing assistance in library use to students on a class or group basis, through such media as orientation tours, films, slides, detailed lectures on sources of information in specific subject fields. Valuble as these contributions are, they are likely to remain as brave, sporadic efforts with interested teachers until the learning-teaching process requires, as an essential ingredient of its methodology, systematic contributions from the library that are much less superficial in nature.

As our project has progressed, our realisation that the library cannot be studied in isolation from teaching methodology has been sharpened. Many possibilities of library use can be suggested and many topics for experimentation outlined; and the hope has been expressed by many that the library can be integrated into the teaching programme. In actual fact, the library is an integral part of the teaching programme. If its resources are poor and its activities slight, and if teachers' knowledge and use of it are inadequate, whether or not its resources and activities are sub-standard, the efficacy of teaching method, and so of the total learning-teaching process, will suffer accordingly. For this reason, we are categorically opposed at this stage to user studies of the type carried out by the University Grants Committee in England on undergraduate use of libraries[143], and at Birmingham[144], Leeds[145] and Southampton[146] Universities. We consider that much more substantial library provision is required and much hard thinking needs to be done about the total learning-teaching process before user studies in C.A.E. libraries will be meaningful and their results informative. In this regard, we are strongly in agreement with the views expressed by Dr D.J. Urquhart, Director of the National Lending Library for Science and Technology. In a paper on "The Library User and his Needs", presented at a conference of the Society for Research into Higher Education on the subject "Research into Library Services in Higher Education" (held at the University of London on Nov. 3, 1967) Dr Urquhart says:

> "In any investigation we must be aware of confusing what users think they want with what they actually need. The necessity for this approach is reinforced by the evidence we have about the users' ignorance of the tools which are intended to act as guides to scientific literature. Some information surveys, to my mind, are like asking a population which had never heard of V.C. 10's or Queen Mary's, how they would like

> to cross the Atlantic. Such surveys could, of course, measure the ignorance factor. However, this is so high that exact measurement is really unnecessary - you only have to organise a course on the use of scientific literature to realise this.
>
> This brings me into another group of projects which are usually a waste of time - the so-called "market research" type of project. In their extreme form, these projects collect users' notions about some hypothetical services. It is like saying "suppose you could cross the Atlantic by rocket, would you travel that way?" Indeed, some of the market research projects I have seen about possible services would cost more to carry out than to provide the hypothetical services. This, of course, is a form of madness. It is far better to provide a service and see what really happens. I appreciate this may not sound as "academic" as market research, but it is far more reliable"[147].

Dr. Urquhart is speaking of the information requirements of the research worker, but his remarks are equally applicable to those of the student and teacher in any educational institution. His sound commonsense is further revealed in his reminder that "a research project is no substitute for thinking"[148].

At this point it seems timely to state that, though we are aware of the increasing and very proper stress being laid on knowledge itself, as distinct from the many different physical forms in which it is available, we still envisage the C.A.E. library as recognisably a library; nor do we think that to plan for a "conventional", though modern, library is to bury one's head in the sand and plan for what will be an anachronism by the end of the century. We do not see as reality in this country the predictions of William J. Quinly, Director, Educational Media Center, Florida State University, Tallahassee:

> "Before the turn of the present century, it is possible that the local or institutional library as we know it now will no longer exist. It will have become a switching center on a vast information network and will be capable of providing a hard copy computer printout of any document, of receiving and transmitting both audio and video signals. The library of the future will be located in a building which incorporates a large area for sophisticated computers, flashing lights and remote terminal stations with a smaller room for citizens who still enjoy the inherent pleasures of browsing through

bookstacks"[149].

We find more acceptable the suggestions of C. Walter Stone, Director of Libraries, University of Pittsburgh, who, in an article entitled "The Library Function Redefined" says: "...the library of the future,as the author sees it, will be composed of printed materials and computer storage units with a broad range of new media in between. And a guess is that for a long time to come most patrons will prefer hard copy over other forms for home reading or viewing"[150]. Mr Stone stresses the increasing importance of the library function, as distinct from the library as a physical institution, and says, "In contemplating the library function, the concepts of media will give way to a greater concern for knowledge as such - its assessment, storage, retrieval and rapid transmission"[151]. But, after the fashion of Professor Ernest Roe, he looks beneath the surface and issues a much-needed warning about regard for the worth of knowledge being stored and subsequently retrieved, as opposed to an excessive concern for the ability and means to retrieve it.

"'Massaged' by the words of Marshall McLuhan, the current media mania among professional educators has been given far more attention and credence than careful study and assessment. And multi-media "pie in the sky" is a fantasy shared by too many audio-visual enthusiasts; that is, promises advanced for national communication networks involving satellite-relay transmission say nothing at all about the worth of that which eventually is to be transmitted. Educational communication jobs have been inflated in terms of both job descriptions and salaries far beyond any real importance they have or the abilities of those available to fill them"[152].

We are encouraged in our attitude to the library and books by the HERO report of a "Study to Develop a Research Program for the Design Development of Modern College Libraries". In the proposed research programme, it is clearly stated that:

> "There will be no thought in this library that computers and automation have displaced, or will soon displace, the book. Books are expected to be as important to education and to the library as they ever have been"[153].

However, new means of electronic communication and transmission are looked forward to as eventually giving direct or indirect access to books in other libraries, thus perhaps making possible the pooling of resources, or of specialisation, and avoiding the need for the individual library to purchase rarely used materials. An interesting suggestion, and one which is being increasingly adopted, relates to the recommended use of prescribed texts that may be purchased by students in paperback form. "Professors will be encouraged to use paperback books for their courses, and to require students to purchase such books, to reduce or eliminate the requirement for placing texts on reserved shelves in the library"[154]. We heartily endorse this suggestion, as far as the availability of suitable paperback texts make it practicable.

We feel there is too much indiscriminate, ill-considered talk, in the name of forward thinking, which suggests that the library as we know it today is a soon-to-vanish phenomenon, and that such superficial thinking will not help the establishment of functional C.A.E. libraries. It is necessary to remove the many confusions in thinking about national and regional schemes for storage and retrieval of knowledge, as proposed in the United States, and the uses to be made of recorded knowledge in an educational institution such as the C.A.E., whose predominant interest is the teaching of students. So much that has been written about storage and retrieval of information is geared to the needs of the research worker, whose interests are often specialised, sometimes narrowly so, but in any case are explicit and specific. The C.A.E. student has not yet closely defined his interests or formulated the questions he needs to ask.

The C.A.E., with its emphasis on the baccalaureate student, whose education is at this stage still vocationally general rather than specialised, needs a library that, in its coverage, is somewhere between the university undergraduate library and the research collection. R. B. Downs[155], as quoted by V. W. Clapp and R. T. Jordan, distinguishes four stages in the progress of a collection - the general collection, the well-rounded reference collection, the fundamental research collection, and the comprehensive and specialized research collection. C.A.E. libraries should never need to go beyond stage three of this process of collection development, and in some cases stage three itself would be entered with caution. Requirements encroaching on stage four should be able to be met through arranged access to university library collections. It may well be that at the general stage of learning that is the preoccupation of the C.A.E., the library that favours "hard copy" and lends itself to "browsing" in the widest sense of the term will make the greatest contribution to the learning-teaching process. It is a mistake to attribute the interests and needs of research to those of more general education. The interests of the part-time student, who has so much less time than his full-time counterpart to spend actually in the library, must be carefully watched. He needs generous library borrowing privileges and access to material in a conveniently "borrowable" physical form. Hours of library opening must be extended as long as possible to give the part-time student maximum opportunity for access to, and use of, his library. This is not to say that the library should not be expanded into a genuine resource materials centre, in terms of collection coverage, or that provision should not be made initially, in the physical building, by such means as installation of sufficient conduit for electrical wiring and appropriate outlets, to enable the fullest possible use to be made of audio-visual material and automated carrels, as developments occur and the need arises. It is tremendously important, in any planning, for possible future developments to be taken into account and the way left open and simple for their implementation. It is equally important, however, for their effect on all types of students - full-time, part-time and external - to be considered and evaluated prior to such implementation.

We stress again that the type of use made of the library will depend on the teaching method employed, and that a study of the total learning-teaching process, of which the library is an integral part, needs to be made. When this is done, it may well be found that the library of today, with its emphasis on material in the printed form, is the most educationally suited to the needs of the C.A.E. student. It may, of course, happen, as C. Walter Stone predicts[156], that scientific and technical journals will cease to be published in their present printed form and their contents will be stored on computer tape or disc pack and printed out only on demand. Users of this material will need to have their ideas marshalled and their questions formulated much more precisely than at present, and the browsing value will be eliminated. Should we, however, at this stage, ourselves deliberately eliminate this value? Should we not rather first study carefully the educational implications?

4 THE MAIN OBJECTIVE OF THE LIBRARY: TO CONTRIBUTE POSITIVELY TO THE LEARNING-TEACHING PROCESS

It seems to us of vital importance that librarians in C.A.E.'s should gain the deepest understanding of the goals of advanced education and remain acutely sensitive to them. Only in this way will their libraries have a chance of playing their proper part in the learning-teaching process, and helping develop the liberally educated technologist who can think for himself, and, by reason of his ability to continue learning on his own, adapt to changing conditions. The task is one of tremendous difficulty and challenge, for the aims of advanced education, if able to be fulfilled, will clearly make on the library demands in breadth and depth of a kind that have not been encountered elsewhere. It is obvious that greatly expanded library collections will be required; that many seminar-type rooms, as well as much individual accommodation, will need to be provided in the library; and that in the reader services' area there will have to be an enhanced activity amounting to a revolution, that will come into being only as a result of heavy investment in professional staff who are capable of participating with teachers in the learning-teaching process. Such participation may involve anything from written assistance for an external student to face-to-face help for an oral student; from orientation tours of the library for students or teaching staff to detailed instruction, on an individual or group basis, in sources of information in specific subject areas, the latter occupying, as required, one or two hours, or so much time per week for perhaps a term. As indicated earlier, part-time students will need special consideration, since they will always be the business of C.A.E.'s. In the rationalisation of tertiary education that must surely occur as the C.A.E.'s become established, universities may well "shed" some of their part-time students to C.A.E.'s; but C.A.E.'s, however much their full-time enrolments may increase, must always provide an avenue for part-time study. Part-time students proceeding to the same terminal award as full-time students clearly need access to library collections with the same range of titles. Though their rate of assimilation is slower, there is no difference in the quality of collection they require. They do, however, need more liberal duplication of titles to give them greater opportunities for borrowing. In addition to the most generous hours of library opening, they need swift stack service and professional help promptly and efficiently given. They have no time to wait in "closed reserve" queues; nor can they afford the time to learn by trial and error. So they must be given instruction in library use and sources of information, if they are to have any chance of using the library effectively. External students, who can rarely visit the library at all, need even greater professional help, and this must be given in writing, a much more exacting and time-consuming process than by word of mouth in face-to-face contact.

Inevitably there will be the temptation, initially at least, for C.A.E. libraries to "copy" university libraries, a very different thing from examining, and learning from, them. We deplore the provision in university libraries of closed reserve and/or multiple copy collections and, in some cases, accompanying reading rooms, which all too often become "the library" for the student. In universities, the teaching method is still basically the conventional one of lecture plus assignment, which, aggravated by large lecture classes, has become such a burden for libraries. We realise that the closed reserve collection and reading room is a desperate attempt on the part of the university library to cope with the prevailing teaching method in the university. Needless to say, intense dependence of the student on a narrow range of information can make little contribution to the breadth of outlook, which, it is hoped, will be a characteristic of the professional product of advanced education. We cannot imagine this restrictive method of teaching being adopted in C.A.E.'s. Nevertheless, college librarians should be aware of the serious educational disadvantages of establishing closed reserve collections and reading rooms, and should not accept their provision as in any way essential to the process of tertiary education.

The "reserve book system" comes under heavy fire in the editorial of the April 1, 1969, issue of LIBRARY JOURNAL. In a discussion of why the library is now a target of student attack, reference is made to Harvie Branscomb's declaration over 20 years ago of his desire "to chronicle the imminent demise of the reserve book system". The announcement would, however, he said, be premature. The point is made in the editorial that "It is still premature. The reserve system still flourishes both architecturally in new college library buildings and in library collections. It is only one of many typical features of college libraries that have always frustrated students. It is a crutch supporting a weak and fallacious system of instruction that students have finally begun to question. Its pedagogic justification comes from a tradition of higher education that includes such dubious foundation stones as the lecture-textbook method, the concept of 'in loco parentis', faculty promotion through publication, and a class structure based on rank, tenure, or year of matriculation. The pyramid has the college president at the top and the undergraduate at the bottom. Librarians appear to be at a level not far above the graduate student"[157].

Because the main objective of the library is to make a positive contribution to the learning-teaching process, of a magnitude not yet witnessed, and because of the enormous challenge of accomplishing this, we view with grave misgivings any diversion, in the initial stages of library development, from the main objective. There are already too many suggestions of additional activities that the library might assume before it has even found its proper place in the learning-teaching process of the college itself. The proposal that the library should become a resource materials centre in the sense of producing, as well as housing, non-printed material is surely one of these. In this case, the library would have to assume responsibility for the educational quality and suitability of its productions, for it must be remembered that extra activities bring extra responsibilities, a fact, regrettably, that is not always recognised, let alone faced. The suggested provision of an information service to industry, with all the missionary work that this implies, particularly in relation to small firms, is surely another doubtful area of activity at this stage. Would not missionary work of the type envisaged be better done, initially, amongst staff and students of the C.A.E.'s themselves? As has already been pointed out, colleges of advanced education will maintain the closest possible links with industry in a variety of ways: through part-time, including sandwich, courses; through prior industrial experience of appointees to the full-time teaching staff; through teaching staff engaging in industrial research; through use of part-time lecturers from industry, particularly in specialist areas; through active Course Advisory Committees, with representatives from industry, whose advice is heeded; and perhaps through teaching staff going back and working in industry, as is done in the United States, during vacations, and when on sabbatical leave, instead of undertaking research at a university. These points of contact will make increasing indirect demands on the library, and service to industry could well develop gradually and naturally out of this. Any direct library service offered to industry in the early stages of C.A.E. development must in no way conflict with service to college students and staff. If it does, then, despite possible immediate gains to industry, in the longer term industry itself will suffer from the poorer quality of the diplomate product of the C.A.E. It is of crucial importance to industry, to the nation's productivity and consequent wealth, and to us as members of the community that the diplomate should be of first quality.

5 THE NEED FOR DEVELOPMENT OF NEW ATTITUDES

The swing in emphasis from teaching to learning in the educational process "will place a higher premium on the professional ability of librarians"[158], and require the closest collaboration between administrators, teachers and librarians as fellow educators. This, in turn, will necessitate the development of new attitudes. There must be commitment by them all to the contribution of the library to the education of students, the most important objective of which is to help them learn how to learn. "Facts change, like national enemies, and the memory of them is unreliable and often unnecessary, but the experience of learning never loses its value in individual life"[159].

"...Educators and librarians", says Professor Roe, "must ...be brought together in new alliances... . To be successful, these common efforts will have to be genuine partnerships which start on the supposition that librarians are interested in (1) influencing methods of instruction, (2) initiating demands for materials, and (3) seeing that the collection is used. When positive commitments such as these are made, questions concerning the librarian's educational responsibilities will be answered easily and often quite naturally"[160]. Expressed differently, by Charles E. Chapman, President of Cuyahoga Community College, there must be, on the part of both librarians and teachers, a "willing extension" of their "primary professional competence and responsibility into allied areas - faculty to library and vice versa. The intent here is not to meddle but, rather, a planned integration of the parts which, hopefully, will result in a smoother, more efficient, and more economical library"[161]. "The strength of a community college", he continues, "may very well be measured in terms of how willing and to what extent these two groups (librarians and faculty) correlate their activities"[162]. For "community college" we would like to substitute "college of advanced education".

There will be a need for librarians in C.A.E.'s to participate with teachers in teacher training programmes, particularly those librarians engaged in the professional areas of reader services' work, who will be actively assisting teachers in the training of their students for self-learning, as well as helping the students themselves individually. The desirability, by reason of substantial benefit, has been expressed for junior college librarians to attend "the same kinds of courses, seminars, or institutes which are conducted for the junior college teacher, because junior college librarians are junior college teachers, and the problems of the teachers are the problems of the librarians"[163]. Again, we would substitute "college of advanced education" for "junior college".

Louis Shores, perhaps the founder and certainly the great advocate of the Library-College concept, in an article entitled "The Junior College Impact on Academic Librarianship"[164], says that if he were to return to academic librarianship today, he would devote himself to educational innovation. It is to the junior colleges that he looks for the lead in such innovation. In providing higher education for all, they must be specially concerned with the individual differences of students. This, Louis Shores feels confident, will lead increasingly to the acceptance of independent study as the new learning mode, with all its implications of depth of library use. This, in turn, he believes will have its impact on college and university libraries as well. Since C.A.E.'s are widening the range and diversity of higher education available in Australia, they may well take the same sort of lead in educational innovation as the junior colleges in the United States. Indeed, it is hoped that the learning-teaching process will be one of their chief concerns. Because of the type of education offered in the junior colleges in the United States, the need to cater for individual differences is much greater than in the C.A.E.'s in Australia. The special need of the C.A.E.'s is to equip their students with the ability to continue self-learning for the rest of their lives, because of the rate of change in the field of technology, which is the primary concern of the C.A.E.'s.

The educational potential of the library is as yet largely unexplored, a fact that is being increasingly recognised. In a paper on "The Development of the New Campus (Junior) College Library", Charles E. Chapman said, "This opportunity that librarians have to assist students in acquiring a lifelong habit of learning through use of the library is, in my judgment, one of the most potentially productive, untapped resources on college campuses today. It is one area in which the community college could effect revolutionary changes"[165]. For "community college" we would, once more, like to insert "C.A.E.". Again,

Professor Ernest Roe says:

> "There is currently much emphasis in schools, colleges, and universities on 'independent study'. Yet, with all the connotations this euphonious sounding phrase brings to mind, the main educational instrument for realizing such a concept has scarcely begun to get into the act. That instrument is, of course, the library; and while I...acknowledge many exceptions to my statement, I repeat that the gap between libraries and education has barely started to close"[166].

If C.A.E.'s are to achieve the goals of advanced education, the gap between libraries and education will have to be completely closed.

In a paper on "Education for Junior College Librarianship", Norman E. Tanis, Director of the Library at Kansas State College, Pittsburg, has made the following observations, which are as pertinent to university and college libraries and librarians as to the junior college field:

> "Society thinks too often of the junior college library as a fact factory or a vending machine or supermarket; librarians think too much of themselves as dispensers of prepackaged goods. Seen in this light, the ideal junior college library, like the ideal supermarket or vending machine, turns out packaged goods untouched by human hands. Librarians are not expected to reason why; they are not expected to deal creatively with the students that come into their libraries. Junior college librarians, as well as college librarians, have been too much concerned with the product (that is, the book or the audio-visual material, sound tape, or record), and not nearly enough concerned with the process that a student goes through to gain information in the library"[167].

The remarks quoted above reflect so much of the thinking expressed in current library and educational literature. There is a change in emphasis from the library product to "the most important single factor of library service"[168] - the library user; the use that is being made and, more important still, could and should be made of the product, and the educational role of librarians in ensuring that such use is in fact made. The swing is away from "collecting, organizing, and administering, as ends in themselves"[169]. Ralph S. Emerick, Director of the Library, Stephens College, expresses it thus:

> "I think each of us must agree that our motivating

> principle must always be the enrichment of the instructional program of the institution we serve and the enrichment of the educational process of the students we teach. I emphasize the concept of teaching as a natural function of the college librarian. We should not merely maintain research facilities; we should not be so concerned with the acquisition and cataloguing of materials that we fail in our obligation of service to the faculty and students"[170].

He then goes further, to give some idea of the magnitude of what may be required in terms of library materials and staff:

> "In the process of supplying materials and services to our public, we may well build a small empire. Library resource materials cannot be purchased without an adequate budget, and the students cannot be taught to make the best use of these materials without adequate library personnel"[171].

The time has come for librarians to cease to fear the charge of "empire-building". What is needed is the recognition by all educators that, if the library is to make its proper contribution to the educational process, it must build a small empire.

In a report of the Planning Conference on INTREX, the Information Transfer Experiments at the Massachusetts Institute of Technology, the educational problems of the (university) library are stated. They are grouped into three parts, with significant suggestions of their relative importance, thus:

> "There is, first, the problem of teaching students how to use the library efficiently, a task that may grow in magnitude as the information retrieval system grows in complexity. Second, the library must provide the traditional back-up for the conventional lecture courses, providing the texts, the reserve books, the special readings, etc. Third, and in many respects most significant of all, the library should foster in its users the desire to continue their education beyond the classroom, perhaps even beyond graduation, by self-directed explorations of the library's collections"[172].

To quote again from Norman E. Tanis:

> "...The library should not content itself with merely accumulating materials for the student to use. Education is more than the mere transmission of knowledge. The library has another role in today's college

> education; it must assist the new and healthy ferment which is producing novel approaches to curriculum, new applications of communications media, and the re-examination and re-definition of the teacher's job and his training. All this is now taking place in some community colleges. The librarian can promote this kind of thinking (directed at ensuring better teaching and better learning) by acquiring materials which will enable the innovators to proceed effectively"[173].

Provided that suitable financial investment is made in staff, it will be in the reader services' area that the distinctive role of the library in the C.A.E.'s will be manifest. A university librarian has observed that one of the recent dramatic changes in Australian university libraries has been the pouring of staff into the reader services' area. The concern of Australian university libraries about reader education is of recent origin, but is increasing. The C.A.E. libraries, because of the teaching aims of the C.A.E.'s themselves, should at this stage outstrip the university libraries in the depth and consistency of their integration in the educational programme. However, until the total learning-teaching process is properly defined and studied, not only by administrators and teachers, but by librarians too, all of the many ways in which the library may make its contribution to the educational process will not become clear. Nevertheless, the aims of advanced education are explicit, and librarians must strive, to the best of their understanding and ability, to establish libraries and recruit staffs that will be capable of assuming far greater than conventional roles. Unless they do this, they will not be able to participate with teachers in a meaningful study and application of the learning-teaching process.

In conclusion, we stress again that the integration of the library in the educational programme of the C.A.E.'s will require the closest collaboration between administrators, teachers and librarians as fellow educators, and that this will not be achieved unless there are changes in the attitudes of all three groups of educators.

6 SPECIFICATIONS FOR THE COLLEGE OF ADVANCED EDUCATION LIBRARY

BOOKS, i.e. COLLECTION SIZE

We decided to examine existing standards or guidelines for minumum size of library collections in overseas universities and other tertiary institutions comparable with colleges of advanced education. We also examined the guidelines produced for Victorian college libraries, and the targets, scheduled for early accomplishment, for all C.A.E. libraries, published in the second Wark Report. However, we are of the firm opinion that all these guides have been based, either consciously or unconsciously, on meeting the library bookstock requirements of what we have called the conventional teaching method (that is, lecture plus assignment). Since it is hoped that the approach in the C.A.E.'s will be quite different, it must be realised that considerable, as yet unassessed, enrichment of suggested guidelines may be needed to enable the library to contribute positively to the learning-teaching process.

None of the standards or guidelines which we examined include guides for non-book material. While we believe that the library should provide resource materials in whatever physical form they exist, we feel that there has as yet been too little experience with audio-visual and other non-book material for guidelines to be able to be suggested. Only as a result of experimentation in individual colleges and studies in the field of educational technology, such as those being accorded first priority by the Wark Committee in the 1970-72 triennium, will it be possible to develop meaningful standards for non-book material. We do, however, recommend a study of the recently published "Guidelines for Audio-Visual Services in Academic Libraries", prepared and published by the Audio-Visual Committee of the Association of College and Research Libraries and a subcommittee of the American Library Association's Audio-Visual Committee. These do not contain quantitative standards, since "these will vary with each institution depending on the extent of that institution's involvement in an audio-visual program"[174]; or, in other words, the use of audio-visual material, like that of printed material, will depend essentially on the learning-teaching process in the educational institution.

Nevertheless, they are helpful, well-reasoned guidelines, which should, as they purport to do, "assist librarians to recognize and develop their audio-visual responsibilities and to incorporate the newer media within the traditional concepts of library service"[175].

The standards or guidelines which we examined are listed below:

1. Standards for College Libraries, adopted in 1959 by the Association of College and Research Libraries of the American Library Association[176]. Note. Standards for Junior College Libraries, adopted a year later by the same body, have little relevance, because of the lower academic level of these colleges. Junior or community colleges conduct either two-year terminal courses of the semi-professional or the technician type, or provide the first two years of a four-year university or college course of baccalaureate standard.
2. The Clapp-Jordan formula for estimating the size for liminal adequacy of the collections of senior college and university libraries[177].
3. The University of California, Davis, refinement and modification of the Clapp-Jordan formula[178].
4. Libraries in the new polytechnics, a guide to planning requirements approved by the (British) Council for National Academic Awards in July, 1968[179].
5. Guide to Canadian University Library standards; report, 1961-1964, of the University Library Standards Committee, Canadian Association of College and University Libraries[180].
6. Guidelines for college libraries, with particular reference to libraries in the colleges of advanced education affiliated with the Victoria Institute of Colleges[181].
7. Standards for bookstock, staff and seating capacity[182] given in the chapter on "Libraries in Colleges of Advanced Education" in the second Wark Report.

1. Standards for College Libraries.

These recommend a minimum of 50,000 volumes, for up to 600 students; with an additional 10,000 volumes for every additional 200 students. Once a size of 300,000 volumes is reached, the growth rate may slow down. Part-time and extension students are to be equated into full-time student figures, though no formula is given for this. It should be noted that these standards are now 10 years old.

2. Clapp-Jordan formula for senior college and university libraries.

This assumes a basic collection of 50,750 volumes, including 35,000 book and 250 periodical titles, irrespective of student numbers or any other factor. It then adds on additional titles and/or volumes for six variables, as shown in Table 1.

TABLE 1

FORMULA FOR ESTIMATING THE SIZE FOR LIMINAL ADEQUACY OF THE COLLECTIONS OF SENIOR COLLEGE AND UNIVERSITY LIBRARIES

	BOOKS		PERIODICALS		DOCUMENTS	TOTAL
	Titles	Volumes	Titles	Volumes	Volumes	Volumes
To a basic collection, viz.:						
1. Undergraduate library	35,000	42,000	250	3,750	5,000	50,750
Add for each of the following as indicated:						
2. Faculty member (full time equivalent)	50	60	1	15	25	100
3. Student (graduate or undergraduate in full time equivalents)	....	10	....	1	1	12
4. Undergraduate in honors or independent study programs	10	12	....	....	....	12
5. Field of undergraduate concentration — "major" subject field	200	240	3	45	50	335
6. Field of graduate concentration — Master's work or equivalent	2,000	2,400	10	150	500	3,050
7. Field of graduate concentration — Doctoral work or equivalent	15,000	18,000	100	1,500	5,000	24,500

It is to be noted that increases in student enrolment call only for duplication of books and periodicals, not for additional titles.

Clapp and Jordan acknowledge that they have included in their formula only the six variables that can be "most easily and meaningfully measured"[184]. They do, however, identify other variables, the combined effect of which constitute the controlling factors in each institution. The full list is worthy of thought[185](see below):

1) The student body - size, composition (graduate or undergraduate, full-time or part-time, resident or nonresident, etc.), scholastic aptitude, socio-economic and intellectual background.

2) The faculty - size, involvement in research, "library-mindedness", etc.

3) The curriculum - number of departments of instruction, number of courses, proportion of laboratory to

literature courses, number of undergraduate "majors", number of fields of masters' and doctors' degrees, number of professional schools, etc.
4) Methods of instruction - extent and use of textbooks, reading assigned and independent study, honors work, etc.
5) Availability of suitable places for study on the campus.
6) Geography of the campus - proximity to metropolitan areas, to other large libraries, etc.
7) The intellectual climate - inducements and distractions to study, etc.

As already indicated, we consider "methods of instruction" to be critically important.

It is stated that the total collection figure reached can be a realistic minimum only if all volumes are carefully chosen for their intended purpose and "the weeding program is as active and realistic in relation to needs as is the program of acquisition"[185]. The weakness of the Clapp-Jordan formula is that it provides for increases in the library's holdings only through the operation of six variables and ignores what may be called the natural growth rate, caused by the increasing number of publications in so many fields of knowledge. Is one to assume (as seems unlikely) that the natural growth rate is exactly balanced by the weeding programme? Despite this criticism, the Clapp-Jordan approach is sound in requiring a basic collection, irrespective of student enrolments or any other factor, and thoughtful in the number and range of variables that it lists as requiring additions to the basic collection. In contrast, the "Standards for College Libraries" are much more limited in their approach, being based on one variable only, that is, student numbers.

3. The University of California, Davis.

This endorses the Clapp-Jordan idea of a basic minimum collection, irrespective of student numbers, with additions for assessed variables. "Institutions should not plan library facilities based largely on the size of the enrolment"[186]. "This factor...should rank below the academic program and quality as a factor, particularly as far as book collections are concerned"[187]. It prefers a minimum of 75,000, or even 125,000 volumes, to the Clapp-Jordan figure of 50,750. 75,000 volumes has been accepted as the minimum for the basic undergraduate libraries at each of the new

University of California campuses at San Diego, Irvine and Santa Cruz.

Five of the six Clapp-Jordan variables, to be added to the basic minimum, are assessed and enlarged as follows:

		No. of vols.
a)	Faculty member	200
	Professional research staff member	100
b)	Undergraduate student	10
	Graduate student	20
d)	Undergraduate major	1,000 - 1,500
e)	Master's program	5,000
f)	Doctoral program	25,000

Under the sub-heading "Other library facilities available in the area", the point is made, "Too much weight is often given to this factor. An institution must eventually develop a library to meet its basic needs and other libraries if available should only be depended upon for seldom-used special materials and for the partial support of certain research projects"[188].

4. Libraries in the new polytechnics.

Polytechnics, like colleges of advanced education, are "institutions devoted to university-type work at the undergraduate and, to a lesser degree, post-graduate level"[189]. Like the Clapp-Jordan and University of California, Davis, formulae, this guide makes the point: "The basic stock required to meet academic needs other than research within a discipline is the same for 30 students as for 300 students. It is the duplication of requirements that varies"[190]. It recommends a basic stock of 150,000 volumes, plus 3,000 periodical titles, for a polytechnic with over 2,000 full-time undergraduates and offering a wide range of disciplines, including the humanities, and encouraging linguistic and regional studies in both commerce and technology. Duplication of up to 1 copy for 10 students is suggested. No growth rate is mentioned, and no account is taken of part-time students, though it is known that polytechnics will offer part-time instruction[191], despite their concentration on full-time studies.

While no guide is given for numbers of records, tapes, films, teaching machine programmes etc., an annual budget of £stg.10,000 is suggested, that is one-sixth of the amount of £stg.60,000 for books and periodicals. These figures take no account of capital grants, which "may be required where existing resources are substantially below the minimal stock requirements"[192].

5. Guide to Canadian University Library Standards.

A university is regarded by the University Library Standards Committee of the Canadian Association of College and University Libraries as having an enrolment of 1,000 or more students, and otherwise conforming to the Canadian Universities Foundation's definition of a university as "an institution of post-secondary education, professional training and research, which awards first and advanced degrees in two or more faculties"[193].

A minimum total size of 100,000 volumes is recommended. This minimum should then be increased by 200 volumes for each graduate student until the total is overtaken by the standard of 75 volumes per full-time student. A table is given for size of the periodical collection (see below). It is based on the combined figures of American and Canadian universities (1961-1962 figures), excluding those with a total enrolment over 20,000 or with 50% of the student population in graduate studies. Periodicals do not include annual publications.

Total student population	No. of periodical titles
1,000	1,000
2,000	1,500
3,000	2,100
4,000	2,600
5,000	3,100
6,000	3,600
7,000	4,100
8,000	4,600
9,000	5,100
10,000	5,600
11,000	6,200
12,000	6,700
13,000	7,250

6. Guidelines for college libraries, particularly those affiliated with the Victoria Institute of Colleges.

These recommend a minimum of 50,000 volumes of currently effective stock (books and periodicals) for 1,000 full-time equivalent students in a general college and suggest that the ratio of books to full-time equivalent students should not fall below 50:1 in any college, however small its student enrolment. Larger institutions, such as the Royal Melbourne Institute of Technology, with a wide range of courses, will require considerably greater and richer collections. Specialist institutions with a relatively small student enrolment require a minimum of 25,000 volumes. A minimum of 400 to 500 periodical titles (excluding donated house journals) is suggested for the smaller college (e.g. one with three engineering courses and courses in applied science, business and general studies); and 750 to 1,000 titles for the larger college with a greater variety of courses.

Guidelines for duplication, or provision of multiple copies of individual titles, in a large collection are as follows:

a) prescribed textbooks. Normally, 2 copies only, since students should buy their own.

b) assigned or recommended reading. 2 copies of any assigned title likely to be required by from 5 to 10 students at any one time; 3 copies of any assigned title likely to be required by from 11 to 20 students;
one additional copy for each additional 10 students, to a maximum of 6 copies for 50 students;
one additional copy for each additional 20 students beyond this maximum.

A part-time student is regarded as being equivalent to one-quarter of a full-time student, this fraction being based on "a reasonable approximation of comparative use"[194].

7. Standards for C.A.E. libraries given in the second Wark Report.

These are "subject to later review" and are "to be achieved in a relatively short space of time"[195].

Colleges are divided into five categories, based principally on student enrolment, and a part-time student is rated as one-third of a full-time student. However, a footnote refers to a later section in the chapter on "The Library and the Part-time Student", in which the following statements are made: "It is certainly dubious to argue that the basic book stock he (the part-time student) needs is less than that of his full-time colleagues. Indeed, when considering the provision of multiple copies for large classes, extra weighting should probably be given to part-time students who with less opportunity to read in the library should have an increased opportunity to borrow"[196].

Categories of colleges and their bookstock requirements are shown below. Periodical subscriptions include adequate back runs of each title.

Category 1. Small colleges with less than 600 equivalent full-time (EFT) students and with several fields of study.
Bookstock to reach 25,000 volumes, including 200 periodical subscriptions.
Category 2. Colleges with over 600 and less than 1,000 EFT students and teaching three engineering courses, an applied science course, and business studies or art.
Bookstock to reach 50,000 volumes, including 200-700 periodical subscriptions.
Category 3. Colleges with more than 1,000 and less than 2,000 EFT students and teaching in several fields.
Bookstock to reach 80,000 volumes and 700-1,000 periodical subscriptions.
Category 4. Colleges of more than 2,000 and less than 3,500 EFT students in several study fields.
Bookstock to reach 100,000 volumes, including 1,000 - 2,000 periodical subscriptions.
Category 5. Colleges of more than 3,500 EFT students.
Bookstock to reach 150,000 volumes with 3,000 periodical subscriptions.

We strongly support the idea of a basic collection that is independent of factors such as the size of the student body, and is then weighted for as many variables as can be assessed with some degree of accuracy. However, we disagree equally strongly with the principle of scaling down the part-time student to some fraction of the full-time student for purposes of determining size of library collection and staff required for services to be provided. We consider there has been in the past a very wrong and unfortunate disregard of the library needs of the part-time student. This is now being recognised and studies of his particular requirements have been proposed. Perhaps the most elementary way of beginning to provide for him is to regard his library needs as being at least equal to those of the full-time student, except for seating accommodation, which he obviously cannot occupy as much. It cannot be argued that an inferior book collection, either in quality or quantity, will meet his needs, since he clearly requires access to at least the same range of titles, though over a longer period, and to greater duplication in some areas, because of his greater need to borrow publications, occasioned by his inability to spend as much time in the library as the full-time student. Again, in terms of services, he needs the most liberal hours of library opening, to give him maximum opportunity to use the library both for individual study and for borrowing; and he also needs quick and efficient help and service when he is able to visit the library. He has no time to wait in queues or learn by trial and error. Hence he needs efficient instruction in library use and sources of information, professional help quickly given as required and swift stack service. This has obvious implications in terms of library staffing. It is wrong to assume that, because the part-time student now uses the library less than the full-time student, his true needs are necessarily less. Present library provision takes little account of his needs and so prevents him from making the use that he should of the library. It is an obligation to correct this. The same reasoning applies to external students, who, because they can visit the library very little indeed, need more professional help and advice than even the part-time student, and this must be conveyed by letter, a much more time-consuming process than by word of mouth. We therefore strongly recommend that all students, whether full-time, part-time or external, be regarded as at least equal in their library needs when size of book collections and staffing requirements are calculated. In our own calculations, we have not discriminated against part-time and external students.

In the general disregard for part-time students(the guide for polytechnics does not even mention them), it is heartening to find the following observation in the Canadian Association of College and University Libraries' brief to the Bladen Commission on the financing of higher education, entitled "Forecast of the cost of academic library services in Canada, 1965-1975"[197].

"Part-time 'extension' or 'night course' students come to the library less frequently than 'day' students, but need longer loan periods and hence more copies of recommended readings".

We emphasise again that the first and most elementary step towards considering part-time and external students is to regard their library needs as at least equal to those of full-time students in all except seating accommodation.

The fallacy of basing library bookstock provision entirely on student enrolment is being increasingly recognised. The HERO report on the "Study to Develop a Research Program for the Design Development of Modern College Libraries" mentions this in its discussion of the need for establishing a formula for allocating funds to acquire library materials to support the curriculum. It says, "This formula cannot be a direct relationship between class enrollment and funds, otherwise relatively unpopular but academically significant courses will be so deprived of funds that the quality of their offerings will be affected, which could have an adverse effect upon the quality of the entire school"[198].

The standards and guidelines outlined above clearly refer in the main to central library provision. We heartily endorse the V.I.C. Guidelines' view of the educational advantages of a central library and of the undesirability of expense on separate departmental libraries at this early stage of college library development, and support their recommendation that "the development of a strong, centrally administered collection should receive priority"[199]. On the other hand, we see no advantage to be gained from college librarians burying their heads in the sand and refusing to face such facts as geography. We do, however, stress that all library provision should be under the control of the central library and should be of the same standard; that is, if departmental or branch libraries become necessary, they should be adequately staffed from the central library and should offer, as far as possible, the same hours of opening and services as the central library. We do not countenance collections in schools or departments, mainly for teacher use, either scattered through the school or department or in a central spot under the control of a clerk or office assistant. Anything that is purchased from library funds should be recorded in the main library catalogue and be under the full control of the library. There is an obvious need for the provision of certain types of publications such as handbooks, laboratory, workshop and repair manuals, standards, mathematical tables, case studies, in the teaching school or department. These should be regarded as teaching equipment and purchased from non-library funds such as a materials vote. However, requests for such items should be submitted to the librarian in the first place to enable him to check that there is already a copy in the library, and, if not, to purchase one from the allocation of the requesting school or department, in cases where library votes are divided up in this way; and to exercise a general control over the type and number of such publications purchased. No extra staff or accommodation should be provided by the administration to look after or house these publications. Some simple controls of this type are needed to prevent the growth of "blackmarket" collections.

In general, we favour centralisation, but if decentralisation becomes necessary, we recommend that it be strictly controlled by the librarian. The special difficulties of providing in one large central library a service that is tailored to the differing needs of both students and staff and is, therefore, quite obviously to them superior to the restricted but nevertheless more personal (and so often more satisfying) service that is given in small departmental libraries, are considered in our discussion of staff for services required in C.A.E. libraries.

7 FURTHER EXAMINATION OF THE CLAPP-JORDAN FORMULA

As stated previously, the Clapp-Jordan approach of providing a basic collection of 50,750 volumes, and then building on this by weighting for assessed variables such as student enrolments, number of academic staff, subject areas of undergraduate concentration, etc., seems to us fundamentally sound. Recognition of the need for a basic collection, irrespective of any other factors, is essential to achieve a broadening and liberalisation of the library collections in colleges offering only a small range of courses or specialising in one subject area only, as, for example, the South Australian School of Art and the Victorian College of Pharmacy. The library collections in colleges offering a wider spread of courses, will, by reason of inter-disciplinary overlap, become more automatically broadened and liberalised. This broadening is basic to the aims of advanced education.

We are quite unable to accept a basic library collection smaller than the suggested Clapp-Jordan one of 50,750 volumes for any C.A.E., whether it be a mono-discipline college or a multi-discipline one. Though for some other purposes it may be convenient to separate mono-discipline and specialist colleges from multi-discipline colleges, for matters relating to the library we are opposed to this approach. In terms of the Clapp-Jordan formula, the mono-discipline college needs its basic 50,750 volumes just as much as the multi-discipline college. It will, of course, have a lower rating for the relevant variables, because of narrower fields of subject concentration and, in some cases, fewer staff and students than the multi-discipline college.

Clapp and Jordan, as we have described, endeavour to provide a formula for minimum collections in senior college and university libraries. A minimum collection is established through the provision of a basic collection of 50,750 volumes, which is increased by the application of weightings for assessed variables, the resulting number of volumes constituting the minimum collection. This is a minimum required by each library for self-sufficiency and cannot be achieved through a pooling of resources with any other library or libraries. It is important to be clear about this. Sharing of resources is possible only over and above a certain minimum. Clapp and Jordan endeavour to establish this minimum.

The Clapp-Jordan approach to building minimum library collections seems to us the most promising one to date, and so worthy of further examination and thought. However, the figures it suggests appear to us modest and in their provision for serials, quite inadequate. It should be remembered that the Clapp-Jordan criteria were published in an article that appeared in COLLEGE AND RESEARCH LIBRARIES four years ago and was, therefore, based on even earlier thinking. From the provision of only 250 periodical titles in the basic collection, and 3 for each field of undergraduate concentration or "major" subject area, it seems fairly obvious that the term "periodical" is not used as a synonym of "serial", but, presumably, in the restricted sense of publications appearing more frequently than annually. United States academic library statistics differentiate between numbers of titles of "periodicals" and "total serials", the figure for "serials" sometimes being double or more that for "periodicals". The restrictive definition of periodicals would exclude numbered series, and the review type of serial, ADVANCES IN ..., PROGRESS IN ..., ANNUAL REVIEW OF ... , which has multiplied so rapidly and become so significant, particularly in the last decade, as one means of coping with the information explosion. It also seems obvious that indexing and abstracting publications, which, for the same reason as the review serials, have increased in number and taken on added significance in the last decade, have been wholly or largely disregarded. This means that the true serials area is very short. Clapp and Jordan acknowledge that the reinforcement figure of 335 volumes for each "major" subject field of undergraduate concentration is "very modest". It is only 17% of the 2,000 and more titles that typically appear in "basic lists". It is worth pointing out that the "basic lists" given as examples include electronics, physics and art, as well as what might be thought of as the humanities areas of anthropology, economic and social development of modern China, communism (books in English only) and life and thought in the United States. The electronics list quoted by Clapp and Jordan covers the period 1945 - June, 1959, and another similar list covering July, 1959 - December, 1964, has now been produced. Furthermore, the briefest look at the literature of subjects such as chemistry and biology would confirm that 335 titles is a "very modest" assessment for these areas. (See Appendix A).

To relate the Clapp-Jordan formula to existing library collections in institutions in the United States that might be thought of as in some ways comparable with colleges of advanced education, particularly in the initial stages of development of the colleges, a sampling was taken of 1966-67 library statistics for four-year institutions (other than universities) with graduate programs. Universities were not used, as by definition they (a) give considerable stress to graduate instruction; (b) confer advanced degrees as well as bachelor's degrees in a variety of liberal arts fields; and (c) have at least two professional schools that are not exclusively technological. The requirements in volumes calculated with the Clapp-Jordan formula (accepting the stated rating of the part-time student as equivalent to one-third of a full-time student) were in a number of cases found to be lower, sometimes considerably so, than the total of volumes already held in the existing libraries. This reinforced our view that the Clapp-Jordan formula does not err on the side of over-provision. It was interesting to find, however, that in all the samples taken the number of serial titles actually held in the libraries was considerably in excess of the number provided by the Clapp-Jordan formula. Again, this is reinforcement of our view that Clapp-Jordan is grossly inadequate in its recommendations for serial titles. This view is further strengthened by the fact that,in a recent revision of the Clapp-Jordan formula for junior or community college libraries[200], an enlargement of the periodical provision has been recommended. The original formula calls for a basic collection of 16,875 volumes, including 125 periodical titles, and provides 1 additional periodical title for each faculty member and 3 for each subject field of study. The revision enlarges the basic number of titles to 300, and the additional numbers for each faculty member and subject field of study to 1.3 and 4 respectively. These figures are higher than the corresponding Clapp-Jordan recommendations for senior college and university libraries, namely 250, 1 and 3 titles respectively. From examination of serial literature, we consider that a basic collection of 1,000 titles (including relevant indexing and abstracting publications) would be far more adequate for colleges of advanced education other than those principally concerned with one discipline only. 500 of these titles might be kept for 20 years, and the other 500 for only 10 years. For each field of undergraduate concentration or "major" subject area, we consider 100 titles a modest substitute for the Clapp-Jordan recommendation of 3 (See Appendix A).

We decided to apply the Clapp-Jordan formula to an existing college situation in Australia. Because of ready availability of statistics and the least risk of misinterpretation by us of information supplied, the example chosen was the one closest home, namely the Broadway site. It is a particularly complex one, but does illustrate problems of library provision that exist in States other than New South Wales. The Broadway site accommodates Sydney Technical College as well as the New South Wales Institute of Technology, though the former is part of the Department of Technical Education and the latter comes under the jurisdiction of the New South Wales Advanced Education Board. Library provision, in the ex-Bon Marche department store, is at present joint. The Sydney Technical College Library, as its present name is, serves the Broadway site and is, in addition, the central library of the Department of Technical Education, giving service to the administrative and educational staff at the Head Office of the Department, and supplementing the service in all Technical Colleges throughout the State, where necessary for their Institute as well as their Technical College activities. It is a simple matter to calculate the present Institute library collection requirements in terms of the Clapp-Jordan formula, but this is unreal, for, in practice, the requirements of Sydney Technical College must be taken into account too. This type of situation is by no means peculiar to New South Wales, though it does appear that in all States there are moves, in varying stages of accomplishment, to separate the tertiary, diploma courses from the sub-tertiary, certificate, trade and other courses, both physically, that is, on separate sites, and administratively (the tertiary courses being part of the college of advanced education or institute of technology, and the sub-tertiary of the technical college). Much thought has been given to the formula that should be used to calculate the library collection size for Sydney Technical College. Should the Clapp-Jordan formula for senior college and university libraries be used only for the New South Wales Institute of Technology, and the formula for junior or community college libraries be applied to Sydney Technical College? The junior college formula[201] is given in Table 2 (p. 77).

TABLE 2

FORMULA FOR ESTIMATING THE SIZE FOR LIMINAL ADEQUACY OF JUNIOR OR COMMUNITY COLLEGE LIBRARIES

	BOOKS		PERIODICALS		TOTAL
	Titles	Volumes	Titles	Volumes	Volumes
To a basic collection, viz:					
1. A collection to support a two-year general education or liberal arts (transfer or university parallel) program	12,500	15,000	125	1,875	16,875
Add for each of the following as indicated:					
2. Faculty member (full time equivalent)	30	36	1	15	51
3. Student (full time equivalent)		4		1	5
4. Subject field of study, either transfer or terminal, in which courses are offered beyond the standard general education or liberal arts transfer program	100	120	3	45	165

The many years of close contact and experience of one of us with certificate, trade and other staff and students at the Granville and North Sydney Technical Colleges as well as at Sydney Technical College made us completely unable to accept the Clapp-Jordan junior college library standards for Sydney Technical College Library, which has State-wide as well as site responsibilities. After much discussion, we agreed that some modification in application of the Clapp-Jordan senior college and university library standards would more realistically meet the needs of Sydney Technical College. We therefore gave our attention to this difficult exercise. We have already stated our firm conviction that it is entirely wrong to scale down the part-time student, who is undertaking a course leading to the same terminal award as the full-time student, to a fraction of the latter, when his library collection and service needs are being considered. If anything, the part-time student needs greater consideration in these areas than his full-time counterpart, because of his limited time and consequent difficulty of access to his study and the materials associated with it. After much consideration, we decided to set up our own measure of student "full-time equivalence" for all types of students on the Broadway site, and calculate this as the product of course subject coverage and what might be termed difficulty of study access. Initially, we considered 4 sets of hours available per week (see A, B, C and D in Table 3, p. 78) for full-time diploma, part-time diploma, certificate, trade and special students. The first set (A) was based on a 12-hour day (9 a.m. to 9 p.m.) for 5 days per week (i.e. 60 hours per week) for full-time diploma students; the second (B) on the same, plus 8 hours on Saturday (i.e.68 hours per week); the third (C) on a 12-hour day for 6 days per week (i.e. 72 hours per week); and the fourth (D) on a 12-hour day for 7 days per week (i.e. 84 hours per week). We are aware of the grossness and crudeness of our calculations, and that some factors have not been taken into account. For all this, we consider that the calculations shown in Table 3 have some merit.

TABLE 3

CALCULATION OF STUDENT "FULL-TIME EQUIVALENCE"

Type of Student	Hours Available per week	Hours of Course Attendance per week	Nett Hours Available per week	Subject Coverage	Difficulty of study access	Full-time Equivalence
			A			
Full-time Diploma	60	20	40	1	1	1
Part-time Diploma	20	12	8	3/5	5	3
Certificate	20	10	10	1/2	4	2
Trade	28	8	20	2/5	2	4/5
Special	20	6	14	3/10	2–6/7	6/7
			B			
Full-time Diploma	68	20	48	1	1	1
Part-time Diploma	28	12	16	3/5	3	1–4/5
Certificate	28	10	18	1/2	2–2/3	1–1/3
Trade	36	8	28	2/5	1–5/7	24/35
Special	28	6	22	3/10	2–2/11	36/55
			C			
Full-time Diploma	72	20	52	1	1	1
Part-time Diploma	32	12	20	3/5	2–3/5	1–14/25
Certificate	32	10	22	1/2	2–4/11	1–2/11
Trade	40	8	32	2/5	1–5/8	13/20
Special	32	6	26	3/10	2	3/5
			D			
Full-time Diploma	84	20	64	1	1	1
Part-time Diploma	44	12	32	3/5	2	1–1/5
Certificate	44	10	34	1/2	1–15/17	16/17
Trade	52	8	44	2/5	1–5/11	32/55
Special	44	6	38	3/10	1–13/19	48/95

We decided that it was completely unrealistic to consider an average student working week of more than 72 hours, that is, 12 hours per day for 6 days of the week. We therefore looked at student full-time equivalence in the theoretical 72-hour working week, and from this decided to rate all diploma and certificate students as 1, trade students 2/3rds and special students as 3/5ths. We consider that our attitude to certificate students receives broad support from the Wiltshire report on academic awards in advanced education. This, as we have already mentioned, states that many courses offered in C.A.E.'s will be at sub-professional level. These are the courses in the Wiltshire Category B2, which are recommended, most unwisely in our view, for the terminal award of "diploma". The Wiltshire Committee's thinking on courses in Category B2 needs to be considered in full and for this reason is quoted below.

Category B2[202]

6.20 Many courses offered by the colleges will have limited objectives and will be at the sub-professional level. Some will provide a short tertiary course for those students who may not be willing to commit themselves to a substantial programme leading to professional standing. In other cases community needs are satisfied by a course taking less than three years. Again, some courses, while being properly considered to be tertiary, lead directly from Certificate work which is not at tertiary level.

6.21 Characteristics of courses in Category B2 follow :

(i) The course is of two years' duration on a full-time basis, four years on a part-time basis, or some other equivalent full-time/part-time combination, following the satisfactory completion of secondary education.

(ii) The course treats a fairly restricted area of knowledge and may give only the basic elements of theory before passing to applications or to the development of skills.

(iii) The course may have a somewhat lower standard of entry, but not inconsistent with the satisfactory completion of secondary education or its equivalent, than would be required for entry to courses in Categories A and B1.

Some explanation is needed about the nature and length of the courses conducted by the Department of Technical Education. Certificate (technician) courses most commonly require 9-10 hours attendance per week for 4 years. The educational entrance qualification demanded is the N.S.W.

School Certificate, with, in some cases, passes at an appropriate level in certain specific subjects. Post-certificate courses are of 2 kinds, the prerequisite for both being completion of the appropriate certificate course:

1) Higher Certificate Courses. These extend the certificate course in breadth and depth and are therefore "substantial" courses of at least 2 years' duration, e.g. Metallurgy Higher Certificate Course. 2 years, 10 hours per week.
2) Post-Certificate Courses. These are of any duration, e.g. Chemical Instrumentation. 1 year, 7 hours per week. They may even be simply subjects, as the Electrical Engineering subjects offered to those who have completed the Electrical Engineering Certificate Course, e.g. Electrical Mathematics IV. 1 year, 2 hours per week.

Trade courses are designed for apprentices engaged in the skilled trades, and most commonly require 8 hours' day release attendance per week for 3 years. There are generally no specific educational requirements for entry to trade courses, though students must have reached a standard of education sufficient to enable them to follow the course. Admission is, however, restricted to those who are gaining appropriate experience in their daily occupations. Post-trade courses require completion of a relevant trade course for admission, and may be of any length, though they are usually not more than 2 years.

Special courses mostly provide commercial or technical training for special needs. They may be of any duration and the majority have no specific educational or occupational requirements for admission. Their tremendous range may be judged from the examples given below:

Technical Report Writing. 12 weeks, 2 hours per week.

Industrial Safety. 1 year, 1½ hours per week.

Optical Dispensing. 2 years, 10 hours per week in Stage I, 8 hours per week in Stage II. Entrance requirement: N.S.W. School Certificate with ordinary level passes in English and Science and a credit level pass in Mathematics.

Bankers' Institute. 4 years, 6 hours per week. Entrance requirements: (a) Educational. N.S.W. School Certificate. (b) Occupational. Employment in a banking institution.

Day Matriculation. 1 year. Classes are held between 9 a.m. & 5 p.m. *Entrance requirements*:
(a) *Educational*. N.S.W. School Certificate.
(b) *Age*. 18 years of age.

Indonesian. 3 years. 2 hours per week in Stages I and II, 4 hours in Stage III.

Pre-Sea Induction for Deck Apprentices. 1 Term, 30 hours per week. *Entrance requirement*: Anticipated employment as deck apprentice.

Local Government Clerks. 4 years. 7½ hours per week in Stage I, 8½ hours per week in Stage II, and 6 hours per week in Stages III and IV. Stages III and IV are available only by correspondence. *Entrance requirement:* Higher School Certificate, with a pass in 4 subjects, including English.

We decided to apply the Clapp-Jordan formula for senior college and university libraries, with our own adjustment for full-time student equivalence, to calculate the following minimum library collection requirements:

(i) Broadway site for 1969 (i.e. New South Wales Institute of Technology and Sydney Technical College).
(ii) New South Wales Institute of Technology for 1969.
(iii) Broadway site for 1990.
(iv) New South Wales Institute of Technology for 1990.
(v) Sydney Technical College for 1990.

The statistical information that follows was used for the calculations. Figures for 1969 are actual, whereas those for 1990 are projections from current expectations. No distinction has been made between the full-time, part-time and external students in any one category. All diploma and certificate students have been rated as 1; trade students as 2/3rds; and special students as 3/5ths. Student numbers, as has been pointed out previously, are regarded by Clapp and Jordan as requiring only duplication of existing titles of books and periodicals, not an increase in new titles.

NEW SOUTH WALES INSTITUTE OF TECHNOLOGY, 1969

Faculty	- Full-time	120	
	Part-time	160	approx.
	Total assessed at	158	(on basis of expected staff/student ratio of 1:16)
Students	- Full-time and Part-time	2,525	

Fields of Undergraduate Concentration ("Major" Subject Fields) (e.g. Life Sciences, Mathematics, Mechanical Engineering, Management)	25
Fields of Graduate Concentration (Master's Work or Equivalent)	0
Fields of Graduate Concentration (Doctoral Work or Equivalent)	0

SYDNEY TECHNICAL COLLEGE, 1969

Faculty	- Full-time	521
	Part-time	1,302
	Total assessed at	1,200
Students -		
Certificate & Post-Certificate		
	Oral	10,522
	External	4,824
	Total	15,346
Trade & Post-Trade		
	Oral	9,112
	External	2,175
	Total	11,287
Special		
	Oral	10,524
	External	14,317
	Total	24,841

Fields of Undergraduate Concentration ("Major" Subject Fields)	45*

*S.T.C. offers approx. 334 courses. Because of joint library provision, these have been assessed as covering 45 subject fields, i.e. 13% of the total number of courses offered.

NEW SOUTH WALES INSTITUTE OF TECHNOLOGY, 1990

Faculty	1,875	(assessed on basis of expected staff/student ratio of 1:16)
Students	30,000	
Fields of Undergraduate Concentration ("Major" Subject Fields)		45
Fields of Graduate Concentration (Master's Work or Equivalent)		30
Fields of Graduate Concentration (Doctoral Work or Equivalent)		0

SYDNEY TECHNICAL COLLEGE, 1990

Faculty		1,400	(assessed on 1969 basis)
Students -			
Certificate & Post-Certificate			
	Oral	13,955[1]	
	External	4,824[2]	
	Total	18,779	
Trade and Post-Trade			
	Oral	12,086[1]	
	External	2,175[2]	
	Total	14,261	
Special			
	Oral	13,959[1]	
	External	14,317[2]	
	Total	28,276	
Fields of Undergraduate Concentration ("Major" Subject Fields)			65*

[1] This is the same proportion of the 40,000 projected oral student enrolment for 1990, as obtains in 1969.

[2] As for 1969.

* Scaled down to 40, for joint library provision.

CLAPP-JORDAN CALCULATION OF LIMINAL COLLECTION SIZE FOR LIBRARY SERVING BROADWAY SITE IN 1969

			No. of volumes
Basic collection			50,750
Faculty	1,358		135,800
Students -			
Diploma and Certificate	17,871		
Trade 11,287 x 2/3 =	7,525		
Special 24,841 x 3/5 =	14,905		
F.T E. Total	40,301		483,612
Fields of Undergraduate Concentration			
("Major" Subject Fields)	70		23,450
		Total	693,612

NEW SOUTH WALES INSTITUTE OF TECHNOLOGY LIBRARY COLLECTION REQUIREMENTS, 1969

			No. of volumes
Basic collection			50,750
Faculty	158		15,800
Students	2,525		30,300
Fields of Undergraduate Concentration			
("Major" Subject Fields)	25		8,375
		Total	105,225

CLAPP-JORDAN CALCULATION OF LIMINAL COLLECTION SIZE FOR LIBRARY SERVING BROADWAY SITE IN 1990

		No. of Volumes
Basic Collection		50,750
Faculty	3,275	327,500
Students -		
Diploma and Certificate	48,779	
Trade 14,261 x 2/3 =	9,507	
Special 28,276 x 3/5 =	16,966	
F.T.E. Total	75,252	903,024
Fields of Undergraduate Concentration ("Major" Subject Fields)	85	28,475
Fields of Graduate Concentration (Master's Work or Equivalent)	30	91,500
Total		1,401,249

NEW SOUTH WALES INSTITUTE OF TECHNOLOGY LIBRARY, 1990

		No. of Volumes
Basic Collection		50,750
Faculty	1,875	187,500
Students	30,000	360,000
Fields of Undergraduate Concentration ("Major" Subject Fields)	45	15,075
Fields of Graduate Concentration (Master's Work or Equivalent)	30	91,500
Total		704,825

SYDNEY TECHNICAL COLLEGE LIBRARY, 1990

			No. of Volumes
Basic Collection			50,750
Faculty	1,400		140,000
Students			
Certificate	18,779		
Trade 14,261 x 2/3	9,507		
Special 28,276 x 3/5	16,966		
F.T.E. Total	45,252		543,024
Fields of Undergraduate Concentration ("Major" Subject Fields)	65		21,775
		Total	755,549

For the reasons we have indicated, and particularly in the serials area, we consider the Clapp-Jordan figures too modest. Despite the inadequacy of the actual figures suggested, we favour the Clapp-Jordan approach as a basis for the determination of more accurate standards than have yet been devised, provided that all students, full-time, part-time and external, are rated as equal. Our Clapp-Jordan calculation for library bookstock for the New South Wales Institute of Technology in 1969 is 105,225 volumes. If, however, the standards in the second Wark Report were applied, the New South Wales Institute of Technology would fall into Category 2* and merit, therefore, a provision of only 50,000 volumes. Interestingly, if all students were rated as equal in the application of the Wark Standards, the New South Wales Institute of Technology would fall into Category 4 and merit a provision of 100,000 volumes, which is more nearly comparable with our Clapp-Jordan calculation. It must, however, be appreciated that this is so only because the Institute student enrolment of 2,525 falls at the lower end of the 2,000-3,500 range provided in Wark Category 4.

* 1/3 rd of 2,366 part-time students + 159 full-time students = 948 EFT students

The standards suggested in the Wark Report cannot, of course, be applied to the New South Wales Institute of Technology Library in 1990, since they are, by definition, goals intended for early achievement.

8 STAFF

Standards or guidelines for library staffing are even less well developed than those for library collections. Of greatest interest, perhaps, is the suggested staffing for libraries in the new English polytechnics. This does not establish standards as such, but gives a detailed dissection of staff for the library of a polytechnic, with, it will be remembered, "over 2,000 full-time undergraduates and offering a wide range of disciplines, including the humanities, and encouraging linguistic and regional studies in both commerce and technology"[203]. Such a library requires a basic stock of 150,000 volumes and 3,000 periodical titles, plus an annual budget of at least £stg.60,000 for books and periodicals and £stg.10,000 for non-book material, such as films, records, tapes. The annual budget allows (on 1967 prices) a monograph acquisition rate of 10,000 titles and 1,000 duplicates, and the payment of subscriptions to 2,000 periodicals. The staffing suggested for a polytechnic of the order outlined will be discussed later.

It seems clear that reader services and technical services staff must be computed on a different basis. In the "Standards for Junior College Libraries", it is recommended[204] that staffing be based on a minimum of four service areas and be computed separately for each: technical services, public services, audio-visual services, administrative services. We endorse this. However, we do not feel qualified, at this early stage of C.A.E. library involvement with non-book media, to make any firm recommendations regarding staffing for audio-visual services, except to stress that due staffing allowance must be made for this important and developing area of activity; that is, it cannot, even initially, be "squeezed" into existing services. In some C.A.E.'s a separate audio-visual department exists, and the C.A.E. librarian must determine the relationship of the library to this department. One thing is clear, namely that all students and staff must have the same access to non-book as to book material; which probably means that the library must purchase, house, organise for use and lend audio-visual material in much the same way as book material. Non-library audio-visual departments may well confine their activities in the future to production, some selection and perhaps major repair of materials and equipment, leaving housing, with its associated organisation and promotion of use, to the library. In her 1968 annual report, the Librarian of Swinburne College of Technology, Victoria, says, "We have been working in close association with the Audio-Visual Aids Department towards a definition of our respective areas of responsibility, and present thinking is that it is appropriate for the library to help in the selection of material, to arrange orders, and to maintain catalogues and loan records"[205]. The C.A.E. librarian must decide whether audio-visual materials are to be housed separately from the rest of the library collection, as seems most practical, or are to be integrated into the total collection. Whatever the decisions, one or two professional staff, plus one technician, should be assigned initially to audio-visual services in any C.A.E. library involved in this area of activity - and, before long, this should be in all C.A.E. libraries. This is an area that requires planning, decisions and development. Even if major repairs to materials and equipment are carried out by a separate audio-visual department, checking and minor repairs will always have to be done by a technician employed by the library, if service is not to be seriously interrupted. For the particular benefit of part-time students and staff, there should be full access to audio-visual materials at all times that the library is open, and this will almost certainly require the manning of extra service points.

The recently published "Guidelines for Audio-Visual Services in Academic Libraries" endorse our thinking about the need for adequate library staff for audio-visual services. They stress that the audio-visual librarian should be appointed early in the stages of planning the educational institution's audio-visual programme. "The audio-visual librarian may be appointed from the existing staff depending upon work-load and interests; however, the creation of this position should always entail an increase of the over-all professional staff of the library"[206]. Moreover, "a trained technician should be added to the staff before the purchase of equipment"[207]. The Guidelines point out that "the librarian's ability to select, organize, and service materials applies to all types of learning resources"[208]. Thus the responsibilities of the librarian to non-book materials are the same in kind as to book materials, and include selection, acquisition and cataloguing, collection organization and maintenance, and service. The same sort of service, including promotion of use, should be available as for printed material, and for this reason "the entire library staff should be fully conversant with the various types of materials and with the equipment necessary for their use"[209]

"The potential of audio-visual media", say the Guidelines, "is considerable. The realization of this potential, however, depends upon the knowledge, enthusiasm, and capabilities of the librarians administering the program. The increased possibilities of service and the enhanced resource collections should excite every academic librarian"[210]. The implications, in terms of both quantity and quality of library staff, are obvious.

The best measure of reader services staffing is obtained, we consider, by relating it to student population to be served; whereas technical services staffing should rather be related to the intake of volumes per annum. Student population is itself related to academic staff, through a staff-student ratio (e.g. 1 : 16 desired for the New South Wales Institute of Technology). In the absence of suitable standards or guidelines for reader services and technical services staff, it was decided to examine the existing staff situation in Australian university libraries, to see whether any guides might be derived for C.A.E. libraries.

(a) READER SERVICES STAFF

The ratio of reader services staff to students was calculated for all Australian university libraries for 1968 (see table 4, p.92). The student figure used was the total number of students, irrespective of whether they were undergraduates or graduates, pursuing their studies on a full-time, part-time or external basis. The Australian Universities Commission, in tabling student enrolments in its fourth report, uses equivalent full-time student figures, assigning the following weightings for calculation of full-time equivalence for the triennium 1970-72:

Ph.D. and Master's Degree Students		
	Full-time	2
	Part-time	1
	External	¼
Honours, masters qualifying, post-graduate diploma students and undergraduates		
	Full-time	1
	Part-time	½
	External	½

It is interesting that the Commission has revised its weighting of external undergraduate students since its third report and now rates them as ½, or equal to part-time undergraduates, instead of ¼, as previously, with the following explanation:

> "The Commission's study of the cost of teaching an external undergraduate has led it to the conclusion that the cost is, on the average, not less than the cost of teaching a part-time undergraduate. For some time to come there will continue to be a need, chiefly for members of the teaching profession, to improve their qualifications by external studies and the Commission does not wish to discourage universities from meeting this need by underestimating the cost of meeting it"211.

We have already explained our reasons for regarding the collection and service needs of part-time and external students as at least equal to those of full-time students. We decided against weighting full-time Ph.D. and Master's Degree students as 2, on the grounds that they should be more self-sufficient in library use, even though their needs are greater in depth, than undergraduate students. We decided also that it would not be misleading to confine our examination of the reader services situation in university libraries to 1968, that is, to one year only, since this should be the most favourable year for reader services provision (except, perhaps, 1969, for which figures are not yet available). In the older universities student enrolments have either become fairly constant or are dropping, and the new universities still have the advantage of small enrolments. Because the financial restrictions that came into being after the 1964-66 triennium are still continuing, there is no likelihood of reader services staff having to be transferred to technical services, to ensure that additional funds are spent. The year 1968 should therefore give an accurate picture of the best reader services' performance to date in university libraries.

TABLE 4

AUSTRALIAN UNIVERSITY LIBRARIES 1968

Name of University	Total Student Enrolments	Reader Services Staff	Ratio of Reader Services Staff to Students
ANU	3,981	62	1 : 64
NMU	1,927	21	1 : 92
NNU	2,286	16	1 : 143
NU	16,269	106	1 : 153
NUN	14,618	69½	1 : 210
NUNE	2,469	16	1 : 154
PU	459	8	1 : 57
QTU	591	7	1 : 84
QU	14,726	72½	1 : 204
SFU	1,212	17	1 : 71
SU	8,591	39½	1 : 220
TU	2,643	22	1 : 120
VLU	1,163	22	1 : 53
VMoU	8,466	64	1 : 132
VU	13,990	66½	1 : 210
WU	6,573	41	1 : 160

SOURCE OF STATISTICS: Library Association of Australia — University and College Libraries Section. News sheet. August 1969.

National Average 1 : 133

Order of Priority

1.	VLU	1 : 53
2.	PU	1 : 57
3.	ANU	1 : 64
4.	SFU	1 : 71
5.	QTU	1 : 84
6.	NMU	1 : 92
7.	TU	1 : 120
8.	VMoU	1 : 132
9.	NNU	1 : 143
10.	NU	1 : 153
11.	NUNE	1 : 154
12.	WU	1 : 160
13.	QU	1 : 204
14.	VU	1 : 210
15.	NUN	1 : 210
16.	SU	1 : 220

It is interesting to note that the national average and the median are almost identical.

It must be pointed out that there are many concealed factors in the figures used. For instance, it is not known how much help is given to reader services by technical services staff for rostering and reader education and in other ways. In some university libraries such help is undoubtedly considerable, e.g. at Macquarie and the University of New South Wales, where substantial assistance has been given by cataloguing staff in reader education and maintenance of an enquiry service at the catalogue. The ratio of reader services staff to students is falsely high in such university libraries. The reverse operates at the Fisher Library, University of Sydney. Here reader services staff receive no help from the technical services departments in reader education and only minimal help in rostering; and, in addition, the thirteen branch libraries (staffed by the Division of Reader Services) assign subject headings to their books. Descriptive cataloguing is, however, done for them all by the Cataloguing Department, and classifying for all except the Law and Dentistry branch libraries, which do their own. This means that the ratio of reader services staff to students is falsely low.

It is beyond question that no university library is at present fulfilling its reader services functions in the consistently positive way envisaged for the C.A.E. libraries. The ratio of reader services staff to students in Macquarie university library was looked at very carefully, because of this library's commitment to, and activity in, the reader services area. It is known that the reader services work at Macquarie receives substantial help from technical services staff, so that the ratio of 1 : 92 is falsely high. Despite this, it was felt that a ratio of 1 : 90 might be regarded as a starting-point for adequacy of reader services staffing in C.A.E. libraries.

(b) TECHNICAL SERVICES STAFF

The ratio of technical services staff to volumes added was calculated for all Australian university libraries, except Papua and New Guinea, for the 3-year period 1966-1968 (see table 5, p.94-5). In the technical services area we felt that to examine one year only would indeed be misleading, because of variations in intake of publications, caused by fluctuation in available funds, binding activity and gifts, as well as in the distribution of staff for statistical records (e.g. in the libraries at the University of Adelaide and of Sydney, some staff originally classified as "administration" and "other" have been redistributed into "technical services" and "reader services").

TABLE 5

AUSTRALIAN UNIVERSITY LIBRARIES 1966-1968

Year	No. of Vols. Added	Technical Services Staff	Ratio of Technical Services Staff to Vols. Added
ANU			
1966	34,645	55	1 : 630
1967	38,354	56	1 : 685
1968	42,128	67	1 : 629
			Average: 1 : 648
NMU			
1966	27,400	25	1 : 1,096
1967	35,243	17	1 : 2,073
1968	28,431	31	1 : 917
			Average: 1 : 1,362
NNU			
1966	11,161	8	1 : 1,395
1967	11,830	9	1 : 1,314
1968	10,767	11	1 : 979
			Average: 1 : 1,229
NU			
1966	63,133	68	1 : 928
1967	88,525	62	1 : 1,428
1968	90,086	72	1 : 1,251
			Average: 1 : 1,202
NUN			
1966	29,921	66	1 : 453
1967	44,006	60½	1 : 730
1968	34,614	53	1 : 653
			Average: 1 : 612
NUNE			
1966	18,880	19	1 : 993
1967	20,992	19	1 : 1,105
1968	17,990	20	1 : 900
			Average: 1 : 999
QTU			
1966	3,777	3½	1 : 1,079
1967	3,185	8½	1 : 375
1968	4,257	11½	1 : 370
			Average: 1 : 608
QU			
1966	41,291	49½	1 : 834
1967	50,520	52½	1 : 962
1968	47,680	53½	1 : 891
			Average: 1 : 896
SFU			
1966	19,242	18	1 : 1,069
1967	21,537	23	1 : 936
1968	19,945	25	1 : 798
			Average: 1 : 934
SU			
1966	32,444	41	1 : 791
1967	31,660	46	1 : 688
1968	30,143	55½	1 : 543
			Average: 1 : 674

Year	No. of Vols. Added	Technical Services Staff		Ratio of Technical Services Staff to Vols. Added
TU				
1966	7,800	13½		1 : 578
1967	10,298	16		1 : 644
1968	13,603	17		1 : 800
			Average:	1 : 674
VLU				
1966	40,931	25		1 : 1,637
1967	25,553	31		1 : 824
1968	16,545	40½		1 : 409
			Average:	1 : 957
VMoU				
1966	34,984	54		1 : 648
1967	45,508	58		1 : 785
1968	31,040	58		1 : 535
			Average:	1 : 656
VU				
1966	43,616	36½		1 : 1,195
1967	31,778	37		1 : 859
1968	27,534	34½		1 : 798
			Average:	1 : 951
WU				
1966	22,473	23		1 : 977
1967	11,394	19		1 : 600
1968	13,862	22		1 : 630
			Average:	1 : 736

SOURCE OF STATISTICS: Library Association of Australia — University and College Libraries Section. News Sheet. August, 1967; September, 1968; August, 1969.

National Average 1966-68: 1 : 876

Order of Priority (*Average* 1966-68)

1.	NMU	1 : 1,362
2.	NNU	1 : 1,229
3.	NU	1 : 1,202
4.	NUNE	1 : 999
5.	VLU	1 : 957
6.	VU	1 : 951
7.	SFU	1 : 934
8.	QU	1 : 896
9.	WU	1 : 736
10.	SU	1 : 674
11.	TU	1 : 674
12.	VMoU	1 : 656
13.	ANU	1 : 648
14.	NUN	1 : 612
15.	QTU	1 : 608

Here the national average is close to the median, though not almost identical as in the case of the ratio of reader services staff to students.

There are, again, concealed factors in the figures used, principally the unknown amount of time lost from technical services work through assistance in reader services functions. Macquarie University library shows the highest performance in technical services, no doubt because of its strict adherence to Library of Congress cataloguing and classification. However, it is known that its technical services staff participate substantially in reader services functions, a situation which makes its ratio of technical services staff to volumes added falsely low. Indeed, its ratio of 1 : 917 for 1968, considerably lower than for 1966 and 1967, is undoubtedly to be attributed to this. Technical services in Fisher Library, on the other hand, receive assistance from reader services staff, as pointed out previously, a situation which makes its ratio falsely high. Because of loss of time to reader services, it is a fair assumption that the national average over three years is too low and would be higher if technical services staff were engaged solely on their own work, instead of being drawn off for assistance to reader services. This is not to suggest, however, that it is undesirable for technical services staff to participate in reader services functions. On the contrary, there are many arguments in favour of all professional library staff having contact with, and so becoming more aware and understanding of, the needs and difficulties of readers. University libraries that have established catalogue enquiry services, staffed from their cataloguing departments, recognise the value of this. Some university libraries use all professional staff with the necessary subject competence, whether attached to technical services or reader services, to assist in instructing groups of students in library use and sources of information relevant to their subject fields of interest. This has decided value for the technical services staff involved, but must, nevertheless, reduce their output in technical services, a fact that needs to be taken into account in overall staffing. Allowing for loss of time to reader services work and assuming, as appears realistic, an increasingly sophisticated output per member of staff, it seems reasonable to suggest a ratio of technical services staff to volumes added per annum of 1 : 1,000 for C.A.E. libraries, once some stability has been reached in annual rate of intake. In the early stages of establishment, a larger number of technical services staff, resulting in a lower initial ratio, may be necessary.

The ratio of 1 : 1,000 was accepted as a guideline only after much thought. The expectation of an increasingly sophisticated output per member of staff is reinforced in the cataloguing area by the "Standards for Junior College Libraries", which provides four formulas for technical services staff, application to be dependent on "classification schemes and the use of commercial, centralized or outside services"212:

1. For the library which uses the Dewey Decimal Classification and does its own processing and cataloguing:
   One technical service position per 1,000 volumes catalogued annually.
2. For the library which uses the Library of Congress Classification System and does its own processing and cataloguing:
   One technical service position per 1,500 volumes catalogued annually.
3. For the library which uses the service of an outside facility using the Dewey Decimal Classification System:
   One technical service position per 1,500 volumes catalogued annually.
4. For the library which uses the services of an outside facility and uses the Library of Congress Classification System:
   One technical service position per 2,250 volumes catalogued annually.

It will be appreciated that the approaches suggested in the "Standards for Junior College Libraries" offer greater opportunities of savings in the American than the Australian context. Nevertheless, the point made about increased output through greater sophistication in methods is valid.

We preferred not to accept a guideline for technical services staffing based solely on cataloguing output, since this ignores bound volumes of serials added to stock, a factor giving some indication of serial work load.

APPLICATION OF STAFFING FORMULAS

It was decided to apply the 1 : 90 ratio of reader services staff to students and the 1 : 1,000 ratio of technical services staff to volumes added per annum in

C.A.E. libraries, test its application against existing staffing, and give some estimates of future staffing needs (see tables 6-10, p.98-108). Unfortunately, the necessary figures were not readily available and had to be gathered from a variety of sources. Some statistics were simply unavailable, and the strict accuracy of none can be guaranteed. In some cases, librarians have not formally divided their staff into technical service and reader service categories and cannot assess the allocation of staff to the two functions. Nevertheless, we feel justified in using the statistics given in Tables 6 to 10, and do not think any lack of strict accuracy affects the type of trend we have observed or the general conclusions we have drawn. However, we do recommend that C.A.E. librarians study the University library statistics published annually in the News Sheet of the University and College Libraries Section of the Library Association of Australia and endeavour to compile compatible statistics, where relevant. Obviously, comparisons with university libraries will be made, and it is in the interests of all libraries that this should be so.

TABLE 6

READER SERVICES STAFF REQUIREMENTS IN C.A.E. LIBRARIES, 1969

Name of C.A.E.	Tertiary Student Enrolments	Sub-Tertiary Student Enrolments	Present Reader Services Staff	No. of Staff Required to Provide 1 : 90 Ratio of Reader Services Staff to Tertiary Students Only	Present Total Library Staff
Ballarat Institute of Advanced Education	463[A]	10[A] (See also note under **)	1[B]	5	5[A]
Bendigo Institute of Technology[A]	532	1,312	3 (2 + 1 Branch Librarian)	6	7
Canberra College of Advanced Education[A]	350	0	2	4	10
Caulfield Institute of Technology[A]	1,871	2,076	3	21	6½

Name of C.A.E.	Tertiary Student Enrolments	Sub-Tertiary Student Enrolments	Present Reader Services Staff	No. of Staff Required to Provide 1 : 90 Ratio of Reader Services Staff to Tertiary Students Only	Present Total Library Staff
Footscray Institute of Technology[A]	1,548	5,100	approx. 5 (3 + 2 Branch Library)[C]	17	13
Gippsland Institute of Advanced Education[A]	256	1,920	Total Library Staff of 2	3	2
Gordon Institute of Technology[A]	914	2,352	Total Library Staff of 13	10	13
New South Wales Institute of Technology* (Broadway site only)	2,525	*	*	28	*
Preston Institute of Technology	1,085[A]	0[A] (See also note under **)	1[B]	12	6[A]
Queensland Agricultural College, Gatton	259[A] approx.	292[A] approx.	1[B] (Borrowing)	3	3[A]
Queensland Institute of Technology	2,648[A]	1,961[A]	3[B]	29	7-3/5[B]
Queensland Institute of Technology, Capricornia	167[A]	110[A]	2½ (1½ + 1 Deptl. Librarian)[A, B]	2	7 + 1 part-time (July, 1969)[A]
Royal Melbourne Institute of Technology	8,784[D]	Not Known**	8[B]	98	**17[B]**
South Australian Institute of Technology[A]	3,018	2,913	3	34	**12** + 2 part-time

READER SERVICES STAFF REQUIREMENTS IN C.A.E. LIBRARIES, 1969

Swinburne College of Technology	3,369[A]	3,073[A]	3[B]	37	11[A]
Western Australian Institute of Technology[A]	4,170	0	Total Library Staff of 33	46	33

* The library needs of the staff and students of the New South Wales Institute of Technology located on the Broadway site are serviced by Sydney Technical College, which has a reader services staff of 21. This staff is responsible for service to 37,776 students (our own calculation of full-time equivalence) of Sydney Technical College. The sub-tertiary student body on the site will not diminish.

SOURCE OF STATISTICS:

A. "Questionnaire on Libraries in Colleges of Advanced Education" sent out by Mr P. T. McNally, Librarian, Queensland Institute of Technology, Darling Downs. Replies received May/June, 1969.

B. Statistics distributed at meeting of C.A.E. librarians, Adelaide, August, 1969. In some cases 1968 figures are given for library staff.

C. Footscray Institute of Technology — Libraries Department. Annual report for 1968.

D. Supplied by Victoria Institute of Colleges — reference date 30/6/69.

** Statistics supplied by Victoria Institute of Colleges (reference date 30/6/69) gave the following figures for "approx. number of other students using the library":

Ballarat Institute of Advanced Education	450
Preston Institute of Technology	550
Royal Melbourne Institute of Technology	4,400

GENERAL NOTE ON VICTORIAN COLLEGES:

For some of the colleges affiliated with the Victoria Institute of Colleges (V.I.C.), discrepancies exist between the figures taken from the McNally Questionnaire and the official figures (reference date 30/6/69) supplied in November 1969 by the V.I.C. In most cases where discrepancies occur, the V.I.C. figures for tertiary student enrolments are lower than those supplied by librarians in response to the McNally Questionnaire. This is perhaps to be attributed to the fact that the V.I.C. figures are for post first year tertiary enrolments. We used the McNally Questionnaire figures, so as to have the same statistical source for all colleges. We consider that the trends we have observed and the general conclusions we have drawn are not invalidated by these statistical discrepancies.

Of the 15 College libraries examined in Table 6, only one, Queensland Institute of Technology, Capricornia, has an adequate reader services staff for tertiary needs. In the present situation, it is, of course, necessarily inadequate, because it has to serve sub-tertiary needs as well. In 8 cases, the reader services staff required for tertiary needs exclusively is not only greater than the existing reader services staff but also than the present entire library staff of the College. In 6 of these 8 cases, sub-tertiary needs have to be met as well. The situation on the Broadway site in New South Wales is clearly the worst of all. To serve the mix of 40,301 students (our own calculation of full-time equivalence) of the New South Wales Institute of Technology (2,525) and of Sydney Technical College (37,776), a reader services staff of 448 would be required. The present staff of 21 is inadequate even for current tertiary needs only. The resultant depression of service must strain even the most vivid imagination!

Though not the direct concern of this report, it cannot be too strongly stressed that the needs of sub-tertiary students must not be neglected or pushed to one side in the interests of providing quickly for tertiary students. There is the strong danger that this may happen (indeed, it may well have happened already) in libraries that are catering for both tertiary and sub-tertiary needs. Educationally, it is indefensible; and in the national interest, it should be strongly resisted, since people with different types and levels of training are all needed in the work of the community, not just those who have received tertiary education in C.A.E.'s and universities. The study in employment attitudes reported by Mr L.R. Parker records that employers in "several organizations commented on how the increasing use of technicians to underpin the work of their technological graduates acted as an effective multiplier of the latter's output"213.

TABLE 7

READER SERVICES STAFF REQUIREMENTS IN C.A.E. LIBRARIES, 1972

Name of C.A.E.	Predicted Tertiary Student Enrolments [E]	Sub-Tertiary Student Enrolments	No. of Staff Required to Provide 1 : 90 Ratio of Reader Services Staff to Tertiary Students only
Ballarat Institute of Advanced Education	765	Not known	8½
Bendigo Institute of Technology	935	Not known	10
Canberra College of Advanced Education	2,262	0	25
Caulfield Institute of Technology	3,210	Not known	36
Footscray Institute of Technology	2,230	Not known	25
Gippsland Institute of Advanced Education	535	Not known	6
Gordon Institute of Technology	1,990	Not known	22
New South Wales Institute of Technology (Broadway site only)	4,900 approx.	*	54
Preston Institute of Technology	2,025	0	22½
Queensland Agricultural College, Gatton	289	Not known	3
Queensland Institute of Technology	3,275	Not known	36
Queensland Institute of Technology, Capricornia	810	Not known	9
Royal Melbourne Institute of Technology	14,895	Not known	165
South Australian Institute of Technology	5,445	Not known	60½
Swinburne College of Technology	6,150	Not known	68
Western Australian Institute of Technology	8,428	0	94

* See footnote to Table 6.

SOURCE OF STATISTICS:

E. AUSTRALIA — Commonwealth Advisory Committee on Advanced Education. Second report. (Chairman: Sir I. W. Wark.) Canberra, Govt. Pr. 1969, 108-9.

TABLE 8

TECHNICAL SERVICES STAFF REQUIREMENTS IN C.A.E. LIBRARIES, 1969

Name of C.A.E.	No. of Vols. Added 1968*	Vols. Expected to be Added 1969 (approx.)	Average of Vols. Added 1968-9 (approx.)	Present Technical Services Staff	No. of Staff Required to Provide 1 : 1,000 Ratio of Technical Services Staff to Vols. Added 1968-9 (average)
Ballarat Institute of Advanced Education	1,668B	3,000A	2,334	1½B	2½
Bendigo Institute of TechnologyA	2,000	1,500	1,750	2	2
Canberra College of Advanced EducationA	5,000 approx.	15,000	10,000	7	10
Caulfield Institute of Technology	2,028A	1,800A	1,914	3–3/10B	2
Footscray Institute of Technology	4,500A	6,000A	5,250	5C approx.	5
Gippsland Institute of Advanced Education	Not known	Not known	990** approx.	Total Library Staff of 2A	1
Gordon Institute of TechnologyA	3,829	6,500	5,164	Total Library Staff of 13	5
Preston Institute of Technology	1,542A	950A	2,246	2B	2
Queensland Agricultural College, Gatton	930B	1,200A	1,065	2B	1
Queensland Institute of Technology	3,490B	3,500A	3,495	3–3/5B	4
Queensland Institute of Technology, Capricornia	3,000B approx.	1,750A	2,375	3 + 1 part-timeA	2½
Royal Melbourne Institute of Technology	4,440B	Not known	6,280** approx.	6B	6½
South Australian Institute of TechnologyA	5,300	10,000	7,650	6	8
Swinburne College of Technology	3,350B	3,500A	3,425	6B	3½
Western Australian Institute of Technology	Not known	Not known	Not known	Total Library Staff of 33A	—

SOURCE OF STATISTICS:
As for Table 6.

* The McNally Questionnaire (Source A) asked for "titles" added. However, some libraries actually stated that they were supplying statistics for "volumes", not "titles". Source B asked for "monographs". It seems a reasonable assumption that most libraries gave numbers of "volumes", not "titles", in response to the McNally Questionnaire. Whether "volumes" covered only monographs (books) and excluded bound volumes of serials cannot be determined.

** Number of volumes acquired during year ending 30/6/69 (supplied by Victoria Institute of Colleges).

From Table 8 it can be seen that, on the whole, technical services staff provision in C.A.E. libraries is much nearer adequacy than that for reader services. This is not to say that it is, in fact, adequate, even in the cases where the number of staff required to provide the 1 : 1,000 ratio of technical services staff to volumes added per annum is smaller than the present technical services staff. Uncertainty about the coverage of the figures given in "volumes added" (it is not known in most cases whether they are "volumes" or "titles" added, include or exclude bound volumes of serials and cover tertiary acquisitions only), and lack of knowledge of what proportion of technical services staff is engaged on sub-tertiary work, in cases where the figure for "volumes added" excludes sub-tertiary acquisitions, make it impossible to assess the adequacy of staffing to anything other than a crude degree of accuracy. It must, of course, be realised that, as in the case of university libraries, technical services staff are drawn off to assist in reader services functions. The report of the Librarian of the Footscray Institute of Technology, Victoria, that in the first half of 1968 "both cataloguers spent considerable time relieving at the reference and circulation desk"[214] would not reflect an unusual situation. This is clearly not a case for an increase in technical services staff as such, but further strengthens our assertion of the need for more adequate staffing provision for reader services.

Despite the warnings sounded about the uncertainty of the figures used for calculating technical services staffing, the conclusion is still valid that staffing provision in this area is much nearer adequacy than in reader services in C.A.E. libraries. This is not surprising, since libraries must take advantage of available funds to build collections, without which no service can be given. However, it is critically important that there should be recognition that this is what has happened and that service needs have as yet received virtually no consideration. The justification for building collections is that they are to be used as a vital part of the educational programme. This will not happen by chance, and the imbalance in staffing may well be perpetuated, unless there is clear recognition that it does exist. Money "must" be spent, but reader services can be withheld or neglected indefinitely, however educationally indefensible this may be. Staff and especially students who have had no previous experience of adequate reader services will find it difficult to clamour for what should be provided as a normal part of the educational programme. The part-time student particularly often simply "goes without", because the library is not open at weekends, because there are insufficient experienced professional staff on duty at night to help him in the half hour that he has managed to make available, because the room housing current issues of serials closes early and he cannot browse in it, or for a variety of other reasons. Everyone acknowledges that this is regrettable, but, in our present mode of evaluation, not as unthinkable as failing to spend available funds. We "must" spend funds. Equally, let our thinking recognise that we "must" give service.

TABLE 9

TECHNICAL SERVICES STAFF REQUIREMENTS IN C.A.E. LIBRARIES, 1972

Name of C.A.E.	No. of Vols. Held 1968	Estimated 1972 Bookstock[F]	Average Intake of Vols. per annum Required to achieve 1972 Target (approx.)	No. of Staff Required to Provide 1 : 1,000 Ratio of Technical Services Staff to Vols. Added per annum
Ballarat Institute of Advanced Education	13,078[B]	34,000	5,225	5
Bendigo Institute of Technology	25,250**	36,000	2,690	3
Canberra College of Advanced Education	4,265[B]	Not known	—	—
Caulfield Institute of Technology	12,971[B]	36,000	5,750	6
Footscray Institute of Technology	15,540[C]	42,000	6,615	7
Gippsland Institute of Advanced Education	5,722[B]	7,200	375	½
Gordon Institute of Technology	20,000[A] approx.	48,100	7,025	7
Preston Institute of Technology	8,963[B]	17,000	2,000	2
Queensland Agricultural College, Gatton	12,715[B]	19,064	1,590	1½
Queensland Institute of Technology	11,063[B]	30,000	4,725	5
Queensland Institute of Technology, Capricornia	7,000[B] approx.	30,000	5,750	6
Royal Melbourne Institute of Technology	38,600[B]	71,200	8,150	8
South Australian Institute of Technology	25,000[B] approx.	52,800	6,950	7
Swinburne College of Technology	30,000[B]	45,020	3,750	4
Western Australian Institute of Technology	30,000[A] approx.	104,750	18,690	19

SOURCE OF STATISTICS:

A. As for Table 6.
B. As for Table 6.
C. As for Table 6.
F. Statistics from Commonwealth Department of Education and Science supplied to Library Sub-Committee of the Commonwealth Advisory Committee on Advanced Education (Document No. 70, 3 October, 1969), with the warning that the estimated figures are overstated. These were derived from the original State submissions, but there were considerable reductions in the final grants for the 1970-72 triennium.

**Supplied by Victoria Institute of Colleges.

In its chapter on libraries, as we have already mentioned, the second Wark report provides tentative standards, "to be achieved in a relatively short space of time"[215], for bookstock, staff and seating capacity in C.A.E. libraries. We are quite unable to accept these standards, even on the basis of accomplishment within the 1970-72 triennium. We have already expressed our strong objection to the scaling down of the part-time student to one-third of his full-time counterpart in calculations of his library collection and service needs. The basis for, and validity of, our objections is acknowledged later in the library chapter in a special section on "The Library and the Part-time Student"[216], yet the E.F.T. rating of one-third is still applied to the part-time student in the standards given. We have also stated our conviction that every C.A.E. library needs a basic collection of certainly no less than 50,750 volumes, irrespective of any other factors such as student enrolments. Volume weightings are then to be applied for numbers of academic staff, students, fields of study, etc. We cannot accept a standard for bookstock that is based almost exclusively on numbers of students enrolled. Nevertheless, we decided to apply the Wark Report bookstock standards to C.A.E. libraries, assuming that the standards should be met by the end of 1972, and then calculated the technical services staff (using our ratio of 1 : 1,000) needed to meet this 1972 bookstock target. We next added on our calculated figures for 1972 reader services staff requirements (tertiary needs only), based on our ratio of 1 : 90, thus obtaining a total of technical services and reader services staff required in individual C.A.E. libraries in 1972; and compared our totals with the Wark Report standards for staffing (see table 10, p.108). These include administrative staff as well, but specifically exclude staff required for binding, audio-visual and publishing activities, evening opening and branch libraries. Our figures also exclude staff for binding, audio-visual services and publishing, but include those required for evening opening and branch libraries, where applicable. We are aware that our suggested staffing figures are produced from a "mix" of our own guidelines and those of the Wark Report, but feel, nevertheless, that they are more realistic than those suggested in the Wark Report and give a more accurate picture of the order of staffing provision that is needed in C.A.E. libraries. Again, it must be stressed that staffing is considered for tertiary needs only, and that in the practical situation in many, if not most, C.A.E. libraries provision will still have to be made, in varying degrees, for sub-tertiary needs.

TABLE 10

Name of C.A.E.	Wark Report Category No.[F]	Average Intake of Vols. per annum Required to achieve Wark Report Standards for Bookstock by 1972	No. of Technical Services Staff Required to Achieve Wark Report Standards for Bookstock by 1972 (on basis of 1 : 1,000 ratio)	Total of Reader Services Staff (on basis of 1 : 90 ratio) & Technical Services Staff Required 1972 (Tertiary Needs Only)	Total Library Staff (Wark Report Standards) [E]
Ballarat Institute of Advanced Education	2	9,225	9	17½	[illegible]
Bendigo Institute of Technology	2	8,500	8½	18½	8-16
Canberra College of Advanced Education	3	18,925	19	44	16-25
Caulfield Institute of Technology	4	21,750	22	58	25-40
Footscray Institute of Technology	3	15,625	16	41	16-25
Gippsland Institute of Advanced Education	1	4,825	5	11	4-8
Gordon Institute of Technology	3	15,000	15	37	16-25
New South Wales Institute of Technology	4	23,175	23	77*	25-40
Preston Institute of Technology	3	17,750	18	40½	16-25
Queensland Agricultural College, Gatton	1	3,075	3	6	4-8
Queensland Institute of Technology	3	17,225	17	53	16-25
Queensland Institute of Technology, Capricornia	2	10,750	11	20	8-16
Royal Melbourne Institute of Technology	5	27,850	28	193	40-50
South Australian Institute of Technology	4	18,750	19	79½	25-40
Swinburne College of Technology	5	30,000	30	98	40-50
Western Australian Institute of Technology	5	30,000	30	124	40-50

* Reader Services Staff for Broadway site only. Technical Services Staff for Broadway and suburban branches.

SOURCE OF STATISTICS:

E. As for Table 7, 61-2.

F. As for Table 9.

In the case of only one College in Table 10, namely Queensland Agricultural College, Gatton, does our suggested staffing for 1972, for tertiary needs only, fall within the range of the Wark Report standards. It must, however, be remembered that this College may be serving sub-tertiary as well as tertiary needs in 1972, and that it falls into Category 1, which sets a collection standard of only 25,000 volumes. We believe that 50,000 volumes is the minimum viable size for any C.A.E. library, even if it is serving an institution concerned primarily with one discipline only. In all cases other than the Queensland Agricultural College, our suggested staffing is beyond the range of the Wark Report recommendations, and, in the case of the larger C.A.E.'s, very considerably so. Yet we believe that our suggestions are essentially moderate, and in all probability much too modest. A close examination of the recommended staffing for the libraries in the new English polytechnics confirms this view. Such an examination is both interesting and instructive, not least because the assessment of staffing appears realistic if the library is to be equipped to "play a central role in the educational programme as a major teaching instrument"[217].

LIBRARIES IN THE NEW POLYTECHNICS

As mentioned previously, the suggested staffing is for the library in a polytechnic with over 2,000 full-time undergraduate students and offering a wide range of disciplines, including the humanities. A basic stock of 150,000 volumes and 3,000 periodical titles is assumed, to ensure the provision of which capital grants may be required. The annual budget (based on 1967 prices) is £stg.60,000 for books and periodicals and £stg.10,000 for other library recording material - tapes, records, films, etc. In our examination of the proposed library staffing for such a polytechnic, we excluded provision for other library recording material, that is, slide collection and visual and audio aids (total of 7 staff); for bindery (2); printing and plate-making (2), photographic (2), bookshop (2) and trainees (4). This reduced the total staff of 97 to 78. As we wished to study reader services and technical services staffing only, we excluded a further 7 for management, leaving a total of 71 for reader services plus technical services staff. Our dissection of the suggested staffing is as follows:

Reader Services Staff

	Professional Library Staff	Non-professional Library Staff
Reading Areas, e.g.:		
Humanities and social sciences	2	1
Natural Sciences	3	1
Technology	3	1
Undergraduate and public	2	1
Serials	1	0
Information and Liaison	4	2
Tutorial	3	0
Central library utilization:		
Internal loans and control desk	1	5
External loans	1	2
Stack and binding	0	2
Cloakroom	0	2
Reprographic services:		
Copying/collating etc.	0	2
Publication (editorial)	1	1
Research and development	1	1
	22	21

Total: 43

Technical Services Staff

	Professional Library Staff	Non-professional Library Staff
Serials	1	2
Cataloguing and information processing	6	6
Acquisition:		
Books (if processing by bookseller)	1	4
Central library utilization:		
Stack and binding	1	2
Receipt and dispatch	0	2
Research and development	1	2
	10	18

Total: 28

TOTAL OF READER SERVICES AND TECHNICAL SERVICES STAFF: 71

It is interesting to note that the reader services staffing proposed gives a ratio for reader services staff to students of approximately 1 : 47. Had we applied our reader services formula of 1 : 90 and our technical services formula of 1 : 1,000, we would have estimated a staff of approximately 22 for reader services and of perhaps 15 for technical services, that is, a total of 37, compared with 71. The Wark Report standards, if applied, would call for a total staff at the lower end of the 25 to 40 range. It must be remembered that the proposed polytechnic library staffing includes under "information and liaison" officers to provide an information service to industry and commerce (liaison with outside organizations, minimum visits 120p.a.), an activity which we have deliberately omitted from our calculations. However, "information and liaison" accounts for a total of only 4 professional and 2 non-professional staff and includes other essential duties, such as liaison with polytechnic departments, Boards of Studies, enquiries.

In considering the adequacy of the staffing proposed for the polytechnic library, it is essential to be clear about its role. It is not only to "play a central role in the educational programme as a major teaching instrument"[218],by:

i) Stimulating "intellectual curiosity and independent learning"[219];

ii) Counteracting "the specialization inculcated by teaching courses"[220]. In addition, it "has a positive role to play as an information communication centre"[221].

Some of the implications of these concepts are[222]:

a. Use of the library must be associated jointly with lectures and practical work as principal media for teaching as well as learning. Existing artificial divisions between the library and teaching locations must be broken down.

b. All students should be taught to recognize the significance of libraries and information services, and trained not only to use them but to familiarize themselves with modern methods of information handling, processing and technical communication.

e. The professional library staff should be fully and effectively drawn into College committees at all levels, and, in particular, on the various Boards of Studies.

f. The library, its services and resources must be an integral part of the Polytechnic and within the College environment.

If library provision is to reflect the principles outlined above, factors such as the following[223] must be taken into account:

1. The library must represent knowledge as a whole although the majority of items added will be within the academic disciplines taught in the Polytechnic.
2. Applied research and, in particular, project work in the final year of sandwich courses call for a substantial provision of retrospective journal holdings in the library.
3. To teach students the effective use of libraries and information services; to search for publications not in stock; to fulfil the role of the library as an information communication centre requires an extensive collection of bibliographies and abstract publications.
4. The basic stock required to meet academic needs other than research within a discipline is the same for 30 students as for 300 students. It is the duplication of requirements that varies.

This is a library designed to carry out the expanded reader service functions which we are hoping will be within the compass of the C.A.E. libraries. Two points struck us forcibly in our study of the proposed library staffing:

1) that the staffing suggested does genuinely reflect the stated role of the library;
2) that our own tentative formula for reader services staffing is, as we suspected, far too low.

It does appear to us that the provision of a technical services staff of 28 is over-generous. At first sight it appeared grossly over-generous, particularly in the cataloguing area. However, a more careful examination made us realise that staff in this area are engaged on far more than conventional cataloguing. Their duties, for instance, include indexing and abstracting. Though we have no precise details of the content of their additional work, it is obvious that it would contribute to an enriched service to readers. The proposed library is to be geared to service of a high order, and the activities of all the staff, whether actually in the reader services area or not, must support it. While a staff of 5 (2 professional and 3 non-professional) engaged full-time in research and development may seem to us luxurious, it is surely no more than is needed to ensure the proper development of library services. The realism of the approach to staffing needs is, we consider, very commendable and also very refreshing, because of its rarity.

RATIO OF PROFESSIONAL TO NON-PROFESSIONAL STAFF

In the "Standards for Junior College Libraries", the following ratios of professional to non-professional staff are suggested:

1) Reader Services - 4 professional to 6 non-professional[224].
2) Technical Services - 1 professional to 2 non-professional[225].

To carry out the expanded programme of reader services, with its increased professional content, we felt that the ratio of professional to non-professional staff would have to be higher than 4 to 6 in this area. The ratio of 1 to 2 in the technical services area appeared much more appropriate. We were interested to find in the suggested polytechnic library staffing a ratio of approximately 1 to 1 in reader services and approximately 1 to 2 in technical services. This confirmed our thinking that a library that is to perform the breadth and depth of services envisaged in the polytechnics and, as we hope, in the C.A.E.'s must have a higher ratio of professional to non-professional staff than 4 to 6 in the reader services area. In the recommended polytechnic library staffing there is, as would be expected, a heavy concentration of professional staff in the reading areas, information and liaison and tutorial, where the ratio of professional to non-professional staff is 3 to 1 (actual 18 professional staff to 6 non-professional). In circulation, on the other hand, the ratio of professional to non-professional staff is 2 to 9 (actual 2 professional to 9 non-professional staff for internal loans and control desk and external loans). A workable starting-point appears to be the provision of 1 professional to 2 non-professional members of staff in technical services, and of 1 professional to 1 non-professional in reader services, with the proviso that in reader services the highest concentration of professional staff will be in what is described in the polytechnic library as the reading areas, information and liaison and tutorial. We are strongly in agreement with the recommendation in the second Wark Report that "There should be a greater concentration of professional librarians in reader services than has traditionally been the case in university and college libraries"[226]. The definition of "reader services" here excludes "loan recording" and is applied to "direct services to readers, such as reference work, tutorials, and promotional activities"[227]. It is also suggested that "Some other less direct specialist activities, such as book selection and bibliographical work, might also form part of the reader services division"[228]. We agree with this suggestion too, though do not think that book selection should necessarily be confined to reader services staff. It should rather be a shared activity of the librarian and his senior library staff.

Inevitably, in the practical situation, with unavoidably restricted funds for library staffing, there will be the temptation to sacrifice quality to quantity of staff. It is perhaps unfair to use the word "temptation"; "necessity" would be more realistic. There is no avoidance of the inevitable. The grave danger in the situation is the continued neglect of certain aspects of service and the permanent depression of standards of service. If, for instance, weekend opening of some C.A.E. libraries is achieved only by rostering for duty insufficiently experienced professional staff or, worse still, not fully professional staff, and if this situation continues for some time, there is an administrative tendency for this inadequate staffing gradually to come to be regarded as adequate, simply because the situation has existed for a long time. Thus the true standard of service is falsified, and it is hard to rectify the inadequacy later. If instruction of students in library use and specific sources of information cannot be accomplished, through a lack in quality and/or quantity of staff, there is a similar tendency to regard such an activity as a luxury that cannot be afforded, and so this very necessary aspect of service continues to be neglected. We must strive to ensure that standards set for C.A.E. libraries are genuine ones, even though not immediately attainable, not just expedients that have been forced on them through shortage of funds.

The greatest threat to the establishment and preservation of proper standards exists in the reader services area. It is vital that there be sufficient experienced professional staff on duty at all times, that is, at night and at weekends as well as during the day, to give students, and especially part-time students, the help they need in using the library. For part-time students particularly, it must be given quickly as well as competently. Because it is not possible to give students individually all the instruction in library use and sources of information that they need, not only for their courses, but as basic equipment for the rest of their working lives, this type of instruction must be accomplished on a group basis. This requires library staff with a high degree of professional knowledge and expertise, subject competence and an aptitude for, if not actual training in, teaching. There must be an increasing provision of professional staff with subject competence, if not specialisation, in particular disciplines or groups of disciplines. It must be the special task of such members of staff to maintain the closest possible liaison with the academic staff in the subject areas for which they are responsible, so that the central library can provide the service tailored to their needs that they would receive in a branch library covering only their particular discipline or disciplines. There is a great need for the central library to "outsell" the personal service that can be given in the smaller branch library. Because there is, as yet, little or no provision of subject "specialists" in C.A.E. libraries, it must not be assumed that they are not needed. The recommendations for "Libraries in the New Polytechnics" strongly stress the need for professional librarians with subject knowledge, who maintain close contact with academic staff. "Responsibility for reading areas should be in the hands of professional librarians with subject knowledge or experience in the subjects involved. These librarians must be in close contact with the academic staff if selection of stock is to meet the needs of the Polytechnic"[229].

RESPONSIBILITIES AND STATUS OF LIBRARY STAFF WITHIN THE COLLEGES

In this context, examination of the recommended staffing for libraries in the new polytechnics is both interesting and salutary.

> "For professional staff two divisions have been used - A and B. The former (A) is intended to cover senior personnel possessing appropriate qualification and experience who have management or academic responsibilities. The range of salaries appropriate for these posts would vary from Head of Department, Principal Lecturer to Senior Lecturer or equivalent scales. The latter (B) posts require professional expertise but not invariably experience; the appropriate scales being on the Lecturer scales or their equivalent"[230].

Of the total polytechnic library staff of 97, 11 fall into category A and 27 into category B.

In case it should be thought that this scale of academic equation "all the way" represents sheer flights of fantasy, it is well to read the preamble to the recommended library standards. Beneath the sub-heading "A guide to planning requirements", there appears the following paragraph[231]:

> "This Guide was approved by the Council [for National Academic Awards] in July 1968. The standard of provision recommended is very considerably higher than that obtaining at present in some of the constituent colleges of the new polytechnics. The Council realize that for them the Guide may represent a long-term target. They hope that for others with better-developed libraries the recommended standards will be achieved in the near future".

If staff of the right calibre are to be attracted to C.A.E. libraries, particularly for the highly professional work in reader services, it is essential that they be offered appropriate status and salaries. They must be accepted and respected by the academic staff of the colleges and enjoy comparable privileges, such as study leave. However, at this early stage of C.A.E. library development, we are wary of recommending a simple equation of professional library staff to academic staff for rates of salary and privileges. We are of the strong opinion that the matter needs much careful thought and consideration within the C.A.E.'s themselves. It must be firmly established within the library that senior status and salary are not to be accorded only for administrative responsibility, that is, for being in charge of staff. They should be awarded also for the intellectual contribution made to the work of the library. It should thus be possible, as one university librarian[232] has suggested, for two people to receive the same salary in the same section: one for being in charge of the administration of the section, and the other for contributing specialised subject knowledge to the work of that section. Until the intellectual content of work performed is appropriately recognised, it will not be possible to attract the type of staff needed to provide the highly professional services envisaged in the C.A.E. libraries.

In any consideration of possible academic equation of professional library staff in C.A.E.'s, account should be taken of the Australian university situation. Broadly speaking, most university libraries formerly enjoyed academic salary equation for their professional staff from the level of lecturer upwards, and some,particularly in Victoria, from below this level. This meant in effect, again broadly speaking, that the Chief Librarian was at professorial level, the Deputy Chief Librarian at reader's or associate professorial level, Heads of Divisions (e.g. Technical Services or Reader Services) at senior lecturer's, and Heads of Departments (e.g. Acquisitions, Cataloguing) at lecturer's level. However, apparently through pressure from the Australian Universities Commission, following the Eggleston Report[233], the Australian Vice-Chancellors' Committee[234] in August, 1967, decided that for graduate and/or professionally qualified non-academic staff (e.g. library, administrative, laboratory and technical staff) academic salary equation should in future be applied only at senior lecturer level and above, and that universities should relate the salaries of posts below this level either to comparable salary scales in the relevant Public Service or to internal scales devised by the university itself. Pressure for academic equation "all the way" could result in an excessive number of purely academic qualifications being required of library staff. To re-arrange thoughts expressed by Norman Beswick[235], library staff should be accepted as equals among faculty on the basis of being fellow-educators rather than fellow-scholars. The approach of the V.I.C. Guidelines for College Libraries is sensible. "Professional library staff should have salaries and status commensurate with their responsibilities and in line with those enjoyed by the equivalent levels of teaching staff"[236] The V.I.C. Board of Studies, in "Comments on the Role of Libraries and Librarians in the Affiliated Colleges of the V.I.C.", February, 1969, a document which does not concern itself with salaries, says, "It is assumed that the Chief Librarian and his senior staff are both academically and professionally qualified to allow them to be considered as equals of the teaching staff at appropriate levels"[237].

The recommendations of the V.I.C. Board of Studies regarding the responsibilities and status of the Chief Librarian and his senior staff in the affiliated colleges of the V.I.C. are well worth consideration. They are quoted below[238].

a) "The Chief Librarian should have sole control of the internal management of the Library and of all Branch Libraries. He should have at least the status of a Head of Department in the largest institutions and that of Principal Lecturer in all others.

b) The Chief Librarian should at all times have access to the Principal of the Institute, though for matters of administrative liaison he may in the larger Institutes be advised to deal with one or other of the Vice-Principals.

c) The Chief Librarian should be by right a member of the senior academic board of the Institute and a member of the budget committee of the Institute.

d) The Chief Librarian and his senior library staff may be members of faculty boards.

e) The Chief Librarian and his senior library staff should be members (if they so wish) of the teaching staff organisations of the Institute and should be members of the academic electorate for any purpose whatsoever".

We stress the importance of (c), and, in connection with (d), point out that the recommendations for "Libraries in the New Polytechnics" include this statement:

> "It is vital that the professional librarians in charge of reading areas should be members of the relevant Boards of Studies and Course Committees"[239].

In concluding this section, we stress again that the question of salaries and status of professional library staff within the Colleges merits and needs very careful thought and consideration before a final determination is made.

LIBRARY COMMITTEES

The second Wark Report says, "It is desirable that each college should have some type of advisory committee representative of the administration, teaching staff and students of the college"[240]. We endorse this, because we think that the library committee can form a very valuable link with the teaching staff particularly. We stress that it should be advisory in nature, for we are fully in agreement with the statement of the V.I.C. Board of Studies that "The Chief Librarian should have sole control of the internal management of the Library and of all Branch Libraries"[241]. It goes without saying that the Chief Librarian should be a full member of the Library Advisory Committee. Consideration should also be given to one or more of his senior staff being full members of it too. It should be chaired by the Principal, the Vice-Principal or the Chief Librarian.

9 EVALUATION OF COLLEGE OF ADVANCED EDUCATION LIBRARY SERVICES

As in the Queensland Institute of Technology, Capricornia, we hope to see established in all C.A.E.'s some type of educational research unit which will continuously review and evaluate the educational objectives of each institution, the methods being used for the accomplishment of these objectives and the degree of success achieved. This whole process will necessarily include an evaluation of the contribution of the library to the educational process. As we have already stressed in regard to courses, buildings, equipment and facilities in C.A.E.'s, the law of supply and demand must operate, that is, provision of bookstock, buildings, staff and services must precede use, and, consequently, evaluation of library services. We are all aware of the tremendous stimulation of demand, particularly by students, that resulted from the provision of more adequate accommodation and bookstock in Australian university libraries. The Librarian of the largest of these, the Library at the University of Sydney, expressed it thus in 1964:

> "One very satisfactory result of providing properly designed libraries is to produce an increase in their use out of all proportion to the purely quantitative increase in facilities provided. If ever any illustration was needed of this truism it is afforded by the reaction of the student public to the new university library buildings in Australia. An absolute flood of use...has characterized the library scene in the past few years"[242].

As we have already indicated in our strong recommendation against premature surveys of library use, evaluation must follow, not precede, provision. Adequate provision of library buildings, bookstock, staff and services has yet to be made in C.A.E. libraries. Nevertheless, the need for evaluation, when more adequate provision has been made, must be clearly recognised. In this regard, the report of the HERO "Study to Develop a Research Program for the Design Development of Modern College Libraries" merits consideration. In discussing the inability of libraries to measure their performance, it recommends the development of a systems analysis methodology for application to library problems, particularly in the area of cost effectiveness[243].

Part of the research programme proposed is the development of such a methodology, applicable to any college library. The report points out that new techniques of systems analysis appear applicable to library matters, but cannot be successfully used because of "a lack of standards, common operational terminology, and meaningful statistics"[244]. It urges "a major effort...to obtain uniform statistics upon which to base the quantitative and the qualitative factors needed for systems analysis, and for evaluating cost effectiveness of library operations"[245]. The research programme will attempt "to establish standards for library statistics, and to formulate means for measuring and quantifying library operations. From existing data, and from the models, tentative standards and means of measurement can be postulated, subject to future refinement. These can be tested, in the course of the research, against actual operations in two or more colleges selected at random"[246]. In regard to "cost effectiveness", the report has this to say:

> "The application of the postulated statistical standards and measurement norms against the operations of the models developed earlier, combined with the testing of these standards and norms on some typical small college library operations, should provide a basis for accurate and reliable cost analysis of college library and other college information systems operations. This will result in the development of an analytic tool of the utmost importance to all college administrators"[247].

There is no doubt that the whole area of measurement of performance needs very careful investigation, and that any facility developed by the library in regard to statistics, methods of quantification and measurement, and cost-benefit analysis would make its operations very much more meaningful to college administrators, who, for budget purposes, must deal with needs that are capable of being quantified. The HERO research programme is worth watching. So also is PEBUL, the British OSTI-supported "Project for Evaluating the Benefits from University Libraries"[248]. Begun in October, 1966, the first year of research, at the University of Durham, was concerned with determining methods for assessing the value or benefit of a university library. In the second year, the project was extended to the University of Newcastle, and the determined methods of value assessment were applied to the comparative merit of centralization or decentralization in a university library.

The findings of projects such as the HERO research programme and PEBUL should be very helpful to librarians in all institutions of higher education. Meantime, C.A.E. librarians should themselves give careful thought and attention to the important area of standards, statistics, methods of measurement of library performance and cost-benefit analysis. In any type of cost-benefit study, it is vital that the "benefit" should be defined broadly and in terms of the total educational process.

10 CONCLUSIONS

Our investigations have led us to conclude that the C.A.E.'s are making a genuine contribution to diversity in tertiary education, and will increasingly provide a viable alternative to university education for those whose interest lies in technology, that is, "the application of knowledge to satisfy human need"[249], rather than the discovery of new knowledge. The community of today, with its growing complexity, needs the type of product, whether labelled "diplomate" or "graduate", that is envisaged for the C.A.E. - the professional man or woman in whom an attitude of mind has been generated that will enable him or her to make an immediate contribution in commerce, industry, government or the arts; who has had the advantages of a liberalised education which has endowed him with social, as well as vocational, competence, and so has an understanding of the place and purpose of his profession in society, appreciates that he is an agent of change and must be prepared to encounter, and cope with, resistance to it, and is able to communicate readily with people, whether orally or in writing, and to work with them in a team or a leadership role; and, above all, who has been equipped with adaptability of mind and the ability to continue self-learning for the rest of his life - essential qualities and abilities for the technologist, because of the rapid obsolescence of technological knowledge.

The type of professional end-product envisaged for the C.A.E. can become a reality only by a revolution in teaching methodology and a swing of emphasis from teaching to learning in what is now increasingly called the learning-teaching process. It is intended that C.A.E.'s will give primary emphasis to their teaching role. For them to be successful in their endeavours, it will be necessary for the library to make a positive contribution, of a magnitude and depth not previously contemplated, to the learning-teaching process. This will require the development of new attitudes by administrators, teachers and librarians alike, who will need to work closely together as fellow educators.

Much investigation of the type of learning-teaching methodology conducive to equipping the student with the ability to continue learning on his own for the rest of his life will be needed, and the role of the library in the educational process will form a major part of any such investigation. Teachers will themselves need guidance in new methods and approaches. It is obvious, too, that much of the responsibility for helping the student learn how to learn will rest with the library; and librarians must be prepared to share the educational role of the teacher. The development of new attitudes and new abilities by both teachers and librarians will not occur by chance or solely through the efforts of small, isolated groups of enthusiasts. It seems to us that there have been,and still are, too many easy assumptions along these lines. If there are to be real changes in the learning-teaching methodology adopted in the C.A.E.'s, not just superficial changes, as, for instance, the use of new media in the same unimaginative way as the older media, there must be joint study of the learning-teaching process by teachers and librarians. Both will need to participate in teacher training programmes, and all C.A.E.'s must establish educational research units whose function is a continuous review and evaluation of the learning-teaching methodology being used in the particular C.A.E.. The need for constant research into, and thinking about, the learning-teaching process, as well as the need to equip both teachers and librarians to play their individual but overlapping roles in the educational process cannot be too strongly emphasised, since they are crucial to the role of the C.A.E.'s in producing the type of diplomate or graduate so badly needed in the community today.

As the educational specifications of the C.A.E.'s are produced and the learning-teaching process adopted in them is defined, so the role of the library, which is an integral part of the learning-teaching process, will become clearly defined. Meantime, it is obvious that no real depth of thought has been given to the implications of the library playing other than a somewhat expanded conventional role in the educational process.

We have tried to highlight the depression of thinking that exists in the areas of provision of bookstock and staff for C.A.E. libraries. No satisfactory minimum standards or guidelines yet exist, and those that have been tentatively produced are in our opinion far too low to satisfy the requirements of even conventional teaching methods. In regard to bookstock, we are strongly in favour of the Clapp-Jordan approach of a basic collection of not less than 50,750 volumes, which is then added to by weightings for as many assessed variables as possible, such as student enrolments and major subject fields of study. Until the need for a substantial basic collection, irrespective of any other factors, is recognised, there will be no chance of establishing C.A.E. libraries that can help produce liberally educated technologists. Provision of bookstock must be matched by provision of staff, a factor that has to date received far too little attention, particularly in the reader services' area. The educational role of the library will necessitate professional staff increases in this area, of an order not previously contemplated, for on these librarians will fall the chief responsibility of helping equip students, whether full-time, part-time or external, with adaptability and the ability to continue self-learning for the rest of their lives. It will be the reader services' area of the library, which, in its staffing and the educational functions it performs, will reflect the revolution in the learning-teaching process in the C.A.E.'s.

We are sure that there has been a serious neglect of the library requirements of part-time and external students, and that much of their lack of use of the library is to be attributed to this neglect, rather than to a lack of need to use the library. We consider that the first and most elementary way to begin catering for the needs of part-time and external students is to stop scaling them down to a fraction, such as one-third or one-quarter, of their full-time counterparts and to regard them as at least equal to full-time students for their collection and service needs. Part-time students will always be the business of the C.A.E.'s, and cannot therefore be neglected.

Finally, our project has convinced us, with steadily increasing force, that the most important thing of all is for the library to find its place in the learning-teaching process and contribute positively to it; and that to do this will require from all educators in C.A.E.'s so much thought, understanding, effort and enthusiasm, and from all C.A.E.'s such heavy financial investment, particularly in professional staff, that no diversion, however intrinsically worthy, from the main objective should be contemplated in the early stages of development. Let us not jeopardise the chance of the C.A.E. library of making a significant contribution to tertiary education.

11 RECOMMENDATIONS

From the thinking and experience associated with our research project, we wish to make the recommendations listed below. We consider Recommendation No.1 to be a prerequisite to virtually every other recommendation. We realise also that there is inevitable overlap between some of our recommendations.

1) That the Commonwealth Advisory Committee on Advanced Education sponsor in an appropriate college a study of the learning-teaching process in colleges of advanced education; a significant part of such a study to be the place of the library in the total learning-teaching process.

In making this recommendation, we wish to refer to "the institutional self-study of the library by representatives from all segments of the professional staff"*, recommended by Charles E. Chapman, President of Cuyahoga Community College. "Such a study", he points out, "can be conducted by very new as well as by established colleges".

"Its purpose would be to determine how library services could be integrated into the learning processes of the student body...It would...include:

> The identification of the major problems in correlating the learning-teaching processes as they relate to faculty-library cooperation and suggestions by which greater cooperation could be developed
> The identification of methods by which students could be stimulated to use the library
> Suggested projects that give promise of improving library services
> Recommendations to the administration of appropriate action to be taken in improving the teaching-learning processes through improved library services".

* CHAPMAN, C.E. "The Development of the New Campus (Junior) College Library". In MOORE, E. LeR. "Junior College Libraries, Development, Needs, and Perspectives: papers presented at a conference sponsored by the American Library Association, the American Association of Junior Colleges, and the University of California, Los Angeles: University Library, School of Library Service, and Clearinghouse for Junior College Information, June 21-24, 1967". Chic., A.L.A. 1969, 22.

2) That the Commonwealth Advisory Committee on Advanced Education give consideration to the formation of a Sub-Committee on the Learning-Teaching Process, which would collaborate with its Library Sub-Committee.
3) That the Commonwealth Advisory Committee on Advanced Education emphasise to all colleges of advanced education the need to establish an educational research unit, charged with the responsibility of continuously reviewing and evaluating the educational objectives of the institution, the methods being used for their accomplishment and the degree of success achieved.
4) That the Commonwealth Advisory Committee on Advanced Education emphasise to all colleges of advanced education the need to establish within their institutions some type of teacher training programme, which includes the study of teaching method conducive to equipping the student to continue "self-learning" for the rest of his life.
5) That the Commonwealth Advisory Committee on Advanced Education suggest to all colleges of advanced education the desirability of their librarians, particularly those engaged in reader education and assistance, participating with teachers in some part, at least, of their teacher training programmes.
6) That in its thinking about the allocation of funds for the purchase of library materials (e.g. from an unmatched Commonwealth grant), the Commonwealth Advisory Committee on Advanced Education bear in mind the need for the provision of capital grants to help bring new or existing libraries up to minimum requirements.
7) That the Commonwealth Advisory Committee on Advanced Education, if necessary through its Library Sub-Committee, give consideration to the problem of imbalance created in college of advanced education libraries, where provision of staff does not match availability of funds for purchase of materials, even though the latter be inadequate for educational needs.
8) That the Commonwealth Advisory Committee on Advanced Education ask its Library Sub-Committee to give consideration to more adequate collating of statistics relating to college of advanced education libraries.
9) That the Commonwealth Advisory Committee on Advanced Education request its Library Sub-Committee to consider the possibility of sponsoring an investigation by college of advanced education librarians of standards for college

of advanced education libraries.

10) That the Commonwealth Advisory Committee on Advanced Education sponsor an investigation, either in an individual college of advanced education, or through an organisation such as the Victoria Institute of Colleges or an ad hoc Committee, such as the Sweeney Committee, an investigation into the salaries, status and privileges (e.g. study leave) of librarians in colleges of advanced education.

11) That, as an incentive to better communication of developments and sharing of experience, the Commonwealth Advisory Committee on Advanced Education, in its distribution of funds for research, bear in mind the desirability of modest funds being made available to enable college of advanced education librarians and/or their senior staff to write up and evaluate worthwhile experiments (whether successful or unsuccessful) undertaken in their respective libraries.

12) That the Commonwealth Advisory Committee on Advanced Education ask its Library Sub-Committee to sponsor an investigation in an appropriate college of advanced education library into the best methods of meeting the vital need for education of students and staff in library use and sources of information.

13) That the Commonwealth Advisory Committee on Advanced Education request its Library Sub-Committee to sponsor the compilation of an advisory manual setting out and discussing the particular problems involved in the acquisition and use of audio-visual materials in college of advanced education libraries.

14) That the Commonwealth Advisory Committee on Advanced Education, through its Library Sub-Committee, investigate the technique of cost-benefit analysis and its application to library operations; and, later, sponsor some cost-benefit studies in individual college of advanced education libraries.

15) That, if modest funds are made available for the purpose suggested in (4), the Commonwealth Advisory Committee on Advanced Education ask its Library Sub-Committee to ensure that an appropriate college of advanced education library reports the results of assigning professional reader services staff with subject specialisations or competence to their particular areas of competence.

APPENDIX A
LITERATURE IN SELECTED SUBJECT FIELDS
1. SERIAL LITERATURE

From the point of view of provision for fields of undergraduate concentration or "major" subject areas, it was decided to examine in detail the serial literature in the fields of chemistry and electronic engineering. A prior, less detailed survey of the serial literature of biology and mathematics readily showed that the literature of biology is a little more extensive than that of chemistry, but that the literature of mathematics is less extensive than that of chemistry, electronics or biology.

Chemistry. In a conservative review, 171 serials in the field of chemistry were identified. With one exception, serials written wholly in a language other than English were omitted (though it is realised that some foreign language serials will be required for undergraduate teaching and learning), as were general science and indexing and abstracting serials, since these were regarded as being included in the basic serial title provision. It may be interesting to record that 20 general science serials were noted, such as:

ADVANCEMENT OF SCIENCE, AMERICAN SCIENTIST, AUSTRALIAN JOURNAL OF SCIENCE, NATIONAL ACADEMY OF SCIENCES, Procs., NATURE, NEW SCIENTIST, SCIENTIFIC AMERICAN.

The branches of chemistry investigated were general, analytical, general industrial, inorganic, organic and physical. Nuclear chemistry was disregarded, as were the following industrial fields: fats, soaps, pharmaceuticals; food; glass, ceramics, etc; leather; metals; paints, etc; plastics, rubbers, etc; textiles and dyes; wood, paper, etc. Six cover-to-cover English translations of Russian journals were included, and 50 house journals. E.M. Baer and H. Skolnik in "House Organs and Trade Publications as Information Sources" in "Searching the Chemical Literature"* list 58 house organs which they regard as equivalent to journals, 67 which are predominantly advertising and 19 primarily for employees and stockholders. They specifically state that their list is given as a guide and is in no way a comprehensive compilation. In their concluding remarks, they say, "House organs and trade publications constitute a large and important body of useful information not duplicated in other sources. Although their primary objective is to sell products or enhance a company's prestige, they successfully communicate the 'latest technical information on uses, physical properties, specifications, and physiological data'"**. Of the 171 chemistry serials identified, 12 would be covered by provision for Physics; 8 by provision for Chemical Engineering; 5 for Biology and 1 for Metallurgy. No less than 43 of the 171 (that is, 25%)are review serials, the majority of the ADVANCES IN..., PROGRESS IN... type.

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* See first item in Sources Consulted, pp. 131-4.

Electronic Engineering. In an equally conservative review of the same type as that for the field of chemistry, the following figures were derived:

No. of serials identified	261
No. of foreign language serials included	4
No. of house journals included	33
No. of serials which would be covered by provision for other fields:	
Physics	31
Data Processing	17
Chemical Engineering	3
Mathematics	1
Electrical Engineering	3
Mechanical Engineering	2
Total of serials in other fields	57

Note: General science and indexing and abstracting serials were omitted, since they were regarded as being included in the basic serial title provision.

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